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Astronomische TAFELN und FORMELN.

Herausgegeben

von

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HAMBURG.

WILHELM MAUKE.

1871.

Berichtigungen.

S. 5. Z. 21 v. u. statt .9 lies 1.9.

S. 23 steht als Seitenzahl 32.

S. 58 u. 59. Columnne 3, statt $\log \varrho'$ lies $\log \varrho$.

S. 170. Z. 4 v. o. statt $(t + t' = 2c)$ lies $(t' + t'') = 2c$.

S. 171. Taf. II. Z. 2 v. o. statt $x = 45^\circ - \varphi$ lies $x = 45^\circ - \psi$.



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Einleitung.

Die Tafel auf S. 2 — 14 enthält die Reduction, die an die Sternzeit anzubringen ist, um mittlere Zeit zu erhalten; die Zehntel der Secunden werden direct aus der Tafel genommen, die Hundertstel finden sich auf jeder ungeraden Seite in der kleinen Tafel am Rande. Es sei z. B. $6^h 7^m 16^s 53$ Sternzeit in mittlere Zeit zu verwandeln, so findet sich auf S. 5 die Reduction

$$\begin{array}{rcl} \text{für } 6^h 6^m 51^s & & - 1^m 0^s 1 \\ \text{» } 25^s 53 & . . & - 0.07 \end{array}$$

$$\begin{array}{rcl} \text{Reduction} & = & - 1^m 0^s 17; \\ \text{dieselbe angebracht an } 6^h 7^m 16^s 53, & & \\ \text{gibt für die mittlere Zeit } 6^h 6^m 16^s 36. & & \end{array}$$

Die Tafel kann ebenfalls zur umgekehrten Aufgabe, der Verwandlung der mittleren Zeit in Sternzeit, benutzt werden; in diesem Falle muss die Reduction auf Sternzeit noch durch die kleine, auf den geraden Seiten befindliche Tafel verbessert werden. Es sei $6^h 6^m 16^s 36$ mittlere Zeit in Sternzeit zu verwandeln. Man findet die Reduction auf S. 5

$$\begin{array}{rcl} \text{für } 6^h 6^m 15^s & & + 1^m 0^s 0 \\ & 1.36 & & 0.00 \\ \text{Pag. 4 gibt für } 0^m 37^s \text{ die Correction} & + & 0.10 \\ \text{Pag. 5 für } 23^s \text{ noch} & & + 0.06 \\ \text{Reduction} & = & + 1^m 0^s 16; \\ \text{diese angebracht an } 6^h 6^m 16^s 36, & & \\ \text{gibt für die Sternzeit } 6^h 7^m 16^s 52. & & \end{array}$$

Zur genaueren Berechnung der Reduction, auf 4 Decimalen, dient Tafel II. auf S. 15. Die Tafel ist eingetheilt in Stunden, Minuten, Secunden und Bruchtheile der Secunden; von den drei ersten Abtheilungen dient die erste Columnne zur Verwandlung der mittleren Zeit in Sternzeit, die zweite zur Verwandlung der Sternzeit in mittlere; die vierte ist für beide Verwandlungen gemeinschaftlich.

Es soll verwandelt werden

$6^h 6^m 16^s 3606$ mittlere Zeit in Sternzeit.

6^h giebt als Reduction . . $59^s 1388$

6^m » » » . . 0.9857

16^s » » » . . 0.0438

0.3606 » » » . . 0.0010

Reduction = $+ 1^m 0^s 1693$

$6^h 6^m 16^s 3606$

$6^h 7^m 16^s 5299$ Sternzeit.

Ebenso $6^h 7^m 16^s 5300$ Sternzeit in mittlere Zeit.

6^h giebt als Reduction . . $58^s 9774$

7^m » » » . . 1.1468

16^s » » » . . 0.0437

0.5300 » » » . . 0.0015

Reduction = $- 1^m 0^s 1694$

$6^h 7^m 16^s 5300$

$6^h 6^m 16^s 3606$ mittl. Zeit.

Die folgenden Tafeln, S. 16 u. 17 Tafel zur Verwandlung der Decimaltheile des Tages in Stunden, Minuten und Secunden, und umgekehrt;

S. 18 Tafel zur Verwandlung des Bogens in Zeit,

S. 19 Tafel zur Verwandlung der Zeit in Bogen,

S. 20 u. 21 Tafel für die Länge der Kreisbögen,
Halbmesser = 1 gesetzt.

S. 22 u. 23 Tafel der mittleren Refraction

bedürfen wohl keiner Erklärung.

S. 24 bis 52 enthalten die von *Bessel* in den Tab. Reg. gegebenen Refractionstafeln, indessen weiter ausgedehnt und für den Gebrauch bequemer hergestellt. Es ist nach *Bessel* der Logarithmus der Refraction, wenn z die Zenithdistanz bezeichnet,

$$= \log \alpha \operatorname{tg} z + A (\log B + \log T') + \lambda \log \gamma.$$

Tafel I. giebt für die scheinbare Zenithdistanz als Argument den Werth $\log \alpha \operatorname{tg} z$, Tafel II. mit demselben Argumente A und λ , Tafel III. $\log T'$ mit dem Argumente der Grade, die das Thermometer am Barometer anzeigt; Tafel IV. $\log B$ mit dem Argumente des Barometerstandes und Tafel V $\log \gamma$ mit dem Argumente der Grade der Lufttemperatur.

Es folgt

S. 53 — 57 Tafel für die Gestalt der Erde nach *Bessel's* Erddimensionen, entnommen aus dem Berliner Jahrbuche für 1852;

S. 58 — 59 Hülftafel für die Parallaxenrechnung.

Die Berechnung der Parallaxe geschieht mit Hilfe folgender Formeln:

Bezeichnet:

- α die AR für den Mittelpunkt der Erde,
- δ die Declination für den Mittelpunkt der Erde,
- α' die AR für den Beobachtungsort,
- δ' die Declination für den Beobachtungsort,
- φ' die geocentrische Polhöhe,
- ϱ den Radius Vector des Beobachtungsortes,
- A den Abstand des beobachteten Gestirnes von der Erde,
- μ die Sternzeit der Beobachtung,
- π die Horizontalparallaxe der Sonne (= 8''809' nach *Leverrier*), so ist

$$\alpha = \alpha' + \pi \varrho \cos \varphi' \sin (\mu - \alpha') \sec \delta' \cdot \frac{1}{A}$$

$$\delta = \delta' + [\pi \varrho \sin \varphi' \cos \delta' - \pi \varrho \cos \varphi' \cos (\mu - \alpha') \sin \delta'] \frac{1}{A};$$

oder, wenn man setzt

$$\operatorname{tg} \gamma = \frac{\operatorname{tg} \varphi'}{\cos (\mu - \alpha')}$$

$$\delta = \delta' + \frac{\pi \varrho \sin \varphi' \sin (\gamma - \delta')}{\sin \gamma} \cdot \frac{1}{A}$$

In der Tafel auf S. 58 u. 59 sind nun für die Hauptsternwarten die Werthe

φ' , $\log \varrho$, $\log \pi \varrho \cos \varphi'$, $\log \pi \varrho \sin \varphi'$, $\log \operatorname{tg} \varphi'$ angegeben. In der letzten Columnne findet sich unter der Bezeichnung s die häufig gebrauchte Grösse, welche an die Sternzeit im mittleren Mittag, wie sie im Berliner Jahrbuche angegeben, anzubringen ist, um die Sternzeit im mittleren Mittage für andere Orte zu erhalten. Es ist dies die Grösse

$$\frac{236^{\circ} 555}{24} l = 9^{\circ} 5565 l,$$

wo l die in Stunden ausgedrückte westliche Länge von Berlin bezeichnet. Um sie in Bezug auf andere Meridiane, z. B. Greenwich zu erhalten, braucht man nur den nebenstehenden Werth mit dem für den gewünschten Meridian angegebenen zu verbinden. Es findet sich z. B. die Correction, die an die Sternzeit im mittleren Mittag in Berlin anzubringen ist, für Altona = + 2.269, für

Greenwich = + 8.802; es wird also, um die Sternzeit im mittleren Mittag von Greenwich auf Altona zu reduciren, an erstere die Correction

— 8.802 + 2.269 = — 6.533 anzubringen sein.

S. 60 — 71. Tafel zur Reduction auf den Meridian.

S. 72 — 88. Tafel der Logarithmen von m und n .

Bezeichnet

φ die Polhöhe,

δ den Abstand des culminirenden Sterns von dem über dem Horizonte befindlichen Durchschnittspuncte des Meridianes mit dem Aequator, so dass für obere Culminationen δ = Declination, für untere Culminationen δ = 180° — Declination wird,

z die beobachtete Zenithdistanz, (Polhöhe, Declination und Zenithdistanz positiv, wenn sie nördlich sind, negativ, wenn südlich.)

x die Correction, um die ausser dem Meridiane beobachtete Zenithdistanz auf die Zenithdistanz zu reduciren, so dass Zenithdistanz im Meridian = $z + x$,
so ist

$$x = - \frac{\cos \varphi \cos \delta}{\sin(\varphi - \delta)} \cdot m + \left(\frac{\cos \varphi \cos \delta}{\sin(\varphi - \delta)} \right)^2 \cdot \cotg(\varphi - \delta) \cdot n$$

oder strenge

$$\sin \frac{1}{2} x = - \frac{\cos \varphi \cos \delta \sin \frac{1}{2} t^2}{\sin(\varphi - \delta + \frac{1}{2} x)}.$$

S. 89 — 91. Tafel für die Mittagsverbesserung.

Hat man 2 correspondirende Sonnenhöhen beobachtet, so sucht man aus der Tafel mit der halben Zwischenzeit als Argument $\log A$ und $\log B$. Bezeichnet nun μ den 48stündigen Zuwachs der Declination der Sonne vom vorhergehenden zum folgenden Tage, (μ ist also positiv vom Wintersolstiz bis zum Sommersolstiz und negativ vom Sommersolstiz bis zum Wintersolstiz), so ist die Mittagsverbesserung

$$= - A \mu \operatorname{tg} \varphi + B \mu \operatorname{tg} \delta.$$

S. 92 — 94. Tafel für die Mitternachtsverbesserung.

Die Mitternachtsverbesserung ist

$$= f A \mu \operatorname{tg} \varphi - f B \mu \operatorname{tg} \delta.$$

$\log A$ und $\log B$ findet man aus der Tafel für die Mittagsverbesserung mit dem Supplement der halben Zwischenzeit zu 12 Stunden. Das Argument, mit dem $\log f$ gefunden wird, ist die halbe Zwischenzeit selbst.

S. 95. Reduction der Zeit auf das *Bessel'sche* Jahr.

Es ist dieselbe Tafel, welche in *Wolfers' »Tabulae Reductionum«* auf S. 1 gegeben ist unter dem Titel: »Reductionis diei ad annum fictum pars prima = *k*.« Ich habe sie nach *Leverrier's* Sonnentafeln neu berechnet und von 1850 — 1900 ausgedehnt.

S. 96 u. 97. Tafel der mittleren Rectascension der Sonne (Sternzeit im mittleren Mittag) von 1871 bis 1891 für Berlin. Es werde gesucht die Sternzeit im mittleren Mittag für den 29sten August 1871 in Berlin.

Der 29ste August ist der 241ste Tag des Jahres.

Epoche 18^h 38^m 41^s 67

Bewegung und Solarnutation für

240 Tage 15 46 13.31

Bewegung für 1 Tag 3 56.55

Nutation 0.00

Mittlere AR der Sonne für Berlin 10^h 28^m 51^s 53

Im Berliner Jahrbuch findet sich 10^h 28^m 51^s 54.

S. 97. Horizontalparallaxe der Sonne, nach *Leverrier*, bedarf keiner Erläuterung.

S. 98 u. 99. Allgemeine Tafeln für die Aberration.

Die Aberration in Rectascension ist

$$= -a \sec \delta \cos (\odot + A - \alpha)$$

Erster Theil der Aberration in Declination

$$= -a \sin \delta \sin (\odot + A - \alpha).$$

$\log a$ und A finden sich mit dem Argumente \odot aus der Tafel I.

Der zweite und dritte Theil der Aberration in Decl. wird aus Tafel II. mit den Argumenten $\odot + \delta$ und $\odot - \delta$ genommen.

S. 100 u. 101. Allgemeine Tafel für die Nutation.

Nutation in AR = $-b \operatorname{tg} \delta \cos (\Omega + B - \alpha) + c$.

Nutation in Decl. = $-b \sin (\Omega + B - \alpha)$.

S. 102. Allgemeine Tafel für die Solarnutation.

Solarnutation in AR = $-f \operatorname{tg} \delta \cos (2 \odot + F - \alpha) + g$.

Solarnutation in Decl. = $-f \sin (2 \odot + F - \alpha)$.

Die von der doppelten Länge des Mondes = $2 \odot$ und der doppelten Länge des Knotens der Mondbahn = 2Ω abhängigen Glieder der Nutation ergeben sich aus der Tafel für die Solarnutation, wenn man in dieselbe, statt mit $2 \odot$, einmal mit $2 \odot$ und dann mit

$2\Omega + 180^\circ$ eingeht, und von der Summe der beiden, diesen Argumenten entsprechenden Nutationsresultate den sechsten Theil, oder noch schärfer $\frac{6}{37}$, nimmt. Ebenso findet sich das von $\odot + \pi$ (π = Perigeum der Sonne) abhängige Nutationsglied, wenn man in die Tafel für die Solarnutation mit $\odot + \pi$ eingeht, und von dem erhaltenen Resultate den sechs zigsten Theil nimmt. Die von den Argumenten $\odot - \pi$ und $\zeta - \pi'$ (π' = Perigeum des Mondes) abhängigen Nutationsglieder sowohl für Rectascension als für Declination werden am einfachsten erhalten, wenn man die jährliche Präcession des Sterns in Rectascension und in Declination für das erstere Argument mit $\frac{1}{394} \sin(\odot - \pi)$ und für das zweite mit $\frac{1}{742} \sin(\zeta - \pi')$ multiplicirt.

S. 103. Interpolationstafel I.

S. 104 u. 105. Interpolationstafel II.

Werden in einer Tafel die Argumente, ihre Functionen und deren Differenzen durch folgendes Schema dargestellt:

Argument	Haupt- function	I. Diff.	II. Diff.	III. Diff.	IV. Diff.	V. Diff.	VI. Diff.
\vdots	\vdots						
a_{-3}	u_{-3}	Δu_{-3}	$\Delta^2 u_{-3}$	$\Delta^3 u_{-3}$	$\Delta^4 u_{-3}$	$\Delta^5 u_{-3}$	$\Delta^6 u_{-3} \dots$
a_{-2}	u_{-2}	Δu_{-2}	$\Delta^2 u_{-2}$	$\Delta^3 u_{-2}$	$\Delta^4 u_{-2}$	$\Delta^5 u_{-2}$	
a_{-1}	u_{-1}	Δu_{-1}	$\Delta^2 u_{-1}$	$\Delta^3 u_{-1}$	$\Delta^4 u_{-1}$	$\Delta^5 u_{-1}$	
a	u	Δu	$\Delta^2 u$	$\Delta^3 u$	$\Delta^4 u$		
a_1	u_1	Δu_1	$\Delta^2 u_1$	$\Delta^3 u_1$			
a_2	u_2	Δu_2					
a_3	u_2						
\vdots	\vdots						
\vdots	\vdots						

so wird für ein Argument a_x die Function

$$\begin{aligned}
 u_x = & \frac{u_1 + u}{2} + \frac{x - \frac{1}{2}}{1} \Delta u + \frac{x(x-1)}{1 \cdot 2} \frac{\Delta^2 u + \Delta^2 u_1}{2} \\
 & + \frac{x(x-1)(x-\frac{1}{2})}{1 \cdot 2 \cdot 3} \Delta^3 u_{-1} \\
 & + \frac{(x+1)x(x-1)(x-2)}{1 \cdot 2 \cdot 3 \cdot 4} \frac{\Delta^4 u_{-1} + \Delta^4 u_{-2}}{2} \\
 & + \frac{(x+1)x(x-1)(x-2)(x-\frac{1}{2})}{1 \cdot 2 \cdot 3 \cdot 4 \cdot 5} \Delta^5 u_{-2} \\
 & + \frac{(x+2)(x+1)x(x-1)(x-2)(x-3)}{1 \cdot 2 \cdot 3 \cdot 4 \cdot 5 \cdot 6} \frac{\Delta^6 u_2 + \Delta^6 u_3}{2} + \dots
 \end{aligned}$$

oder bequemer

$$(1) \dots u_x = u + x \Delta u + \frac{x(x-1)}{4} (\Delta^2 u + \Delta^2 u_{-1}) \\ + \frac{x(x-1)(x-\frac{1}{2})}{6} \Delta^3 u_{-1} \\ + \frac{(x+1)x(x-1)(x-2)}{48} \Delta^4 (u_{-1} + \Delta^4 u_{-2}) \dots$$

Die Function u_x lässt sich aber auch auf folgende Weise herleiten:

$$u_x = u + \frac{x}{1} \frac{\Delta u + \Delta u_{-1}}{2} + \frac{x^2}{1.2} \Delta^2 u_{-1} \\ + \frac{x(x^2-1)}{1.2.3} \frac{\Delta^3 u_{-1} + \Delta^3 u_{-2}}{2} + \frac{x^2(x^2-1)}{1.2.3.4} \Delta^4 u_{-2} \\ + \frac{x(x^2-1)(x^2-4)}{1.2.3.4.5} \frac{\Delta^5 u_{-2} + \Delta^5 u_{-3}}{2} \\ + \frac{x^2(x^2-1)(x^2-4)}{1.2.3.4.5.6} \Delta^6 u_{-3} + \dots$$

oder

$$(2) \dots u_x = u + x \frac{\Delta u + \Delta u_{-1}}{2} + \frac{x^2}{2} \Delta^2 u_{-1} \\ + \frac{x(x^2-1)}{12} (\Delta^3 u_{-1} + \Delta^3 u_{-2}) + \frac{x^2(x-1)}{24} \Delta^4 u_{-2} \\ + \frac{x(x^2-1)(x^2-4)}{240} (\Delta^5 u_{-2} + \Delta^5 u_{-3}) + \dots$$

Tafel I. ist für den Gebrauch der Formel (1), Tafel II. für den der Formel (2) berechnet. Die Formel (1) hat den Vortheil, dass die Correctionen wegen der ungeraden Differenzen beim Gebrauch derselben im Allgemeinen sehr klein sind und beim Interpoliren in die Mitte ganz verschwinden. Wird nämlich $x = \frac{1}{2}$, so werden die ungeraden Glieder, in denen sämmtlich der Factor $x - \frac{1}{2}$ vorkommt, gleich Null, und es entsteht dann die bekannte Gauss'sche Formel für die Interpolation in die Mitte

$$u_{\frac{1}{2}} = \frac{1}{2} \left\{ (u_1 + u) - \frac{1}{8} (\Delta^2 u + \Delta^2 u_{-1}) + \frac{1}{8} \frac{1}{16} (\Delta^4 u_{-1} + \Delta^4 u_{-2}) - \frac{1}{8} \frac{1}{16} \frac{5}{24} (\Delta^6 u_{-2} + \Delta^6 u_{-3}) + \dots \right\}$$

S. 106—150. Tafel der trigonometrischen Functionen; dieselbe bedarf keiner Erklärung.

S. 151—169. Quadrate der Zahlen von 1 bis 10000. Die Tafel ist in eine ungewöhnliche Form gebracht, die mir indessen für astronomische Rechnungen nützlich schien. Es kommt bei der Anwendung der Methode der kleinsten Quadrate öfters vor, dass das Quadrat einer vierziffrigen Zahl, z. B. 11.34, gebraucht wird. Die bisher im Gebrauche befindlichen Quadrattafeln geben nun für

solche Fälle entweder das gesuchte Quadrat nicht scharf, sondern nur einige Decimalen, oder ihr Format ist wegen seiner Grösse höchst unbequem. In vorliegender Tafel ist nun durchweg die letzte Ziffer der Quadrate unter die Tafel gesetzt, da sie für die ganze Columnne gleich bleibt; und es ist dadurch erreicht, dass alle Quadrate strenge richtig sind. So ist z. B. das Quadrat von 5714 nach S. 161 = 32649796.

S. 170—178 enthalten hypsometrische Tafeln von Dr. R. Rühlmann. Dieselben sind dessen Werke: »Die barometrischen Höhenmessungen und ihre Bedeutung für die Physik der Atmosphäre.« Leipzig, Verlag von Joh. A. Barth 1870 entnommen, und setze ich die Erläuterung des Herrn Verfassers für die Tafel hierbei:

»Für einen blossen Ueberschlag genügt für Höhen unter 1000 Meter die Annäherungsformel von Babinet:

$$h_{\text{met}} = 16000 \frac{b' - b''}{b' + b''} \left\{ 1 + 2 \frac{(t' + t'')}{1000} \right\}$$

Für genaue Rechnung bedient man sich der genauen Formel:

$$h_{\text{met}} = 18400 \cdot 2 \left(1.00157 + 0.003675 \frac{t' + t''}{2} \right) \cdot$$

$$\left(1 + 0.378 \frac{\sigma' + \sigma''}{2} \right) \cdot (1 + 0.002623 \cos 2\varphi) \cdot$$

$$\left(1 + \frac{2z + h}{6378150} \right) \log \frac{b'}{b''}$$

Hierin bedeutet t' und t'' die Lufttemperatur, b' und b'' den Barometerstand, σ' und σ'' den Dampfdruck an der unteren und oberen Station, ψ das arithmetische Mittel der geographischen Breiten beider, und z die Höhe der unteren Station über dem Meere.

Statt aber nach dieser Formel selbst zu rechnen, benutzt man Tabellen und zwar in nachstehender Weise.

Wenn obige Formel logarithmirt wird, so geht sie in die folgende über:

$$\begin{aligned} \log h = & \log \left\{ 18400 \cdot 2 \left(1.00157 + 0.003675 \frac{t' + t''}{2} \right) \right\} \dots A \\ & + \log \left\{ \log b' - \log b'' \right\} \dots B \\ & + \log \left\{ 1 + \frac{0.378}{2} \cdot \left(\frac{\sigma'}{b'} + \frac{\sigma''}{b''} \right) \right\} \dots C \\ & + \log \left\{ 1 + 0.002623 \cdot \cos 2\psi \right\} \dots D \\ & + \log \left\{ 1 + \frac{2z + h}{6378150} \right\} \dots E \end{aligned}$$

Es ist also

$$\log h = A + B + C + D + E.$$

Die Grössen A, C, D, E sind in Tafeln gebracht worden, und zwar findet sich A in Tabelle I. mit dem Argumente $t' + t''$, D in Tab. II. mit dem Argumente $x = 45^\circ - \psi$, und E mit den Argumenten $\log h$ und z in Tab. III.

Zur Bestimmung von C dienen die 3 Tabellen IV 1, 2, 3. Der Gebrauch derselben ist leicht ersichtlich. Ist am trockenen Thermometer des Psychrometers die Ablesung T' und am feuchten Thermometer T'' gemacht worden, so dient zur Bestimmung des Druckes des in der Luft enthaltenen Wasserdampfes folgende Formel:

$$\sigma = e_1 - 0.0008 (T' - T'') b$$

in welcher e_1 die zu T'' gehörige Maximalspannung bedeutet, und b den stattfindenden Druck. Wenn das Wasser aber am feuchten Thermometer gefroren ist, muss zur Berechnung des Dunstdruckes die folgende Formel benutzt werden:

$$\sigma_1 = e_1 - 0.000691 (T' - T'') b.$$

Statt aber nach diesen Formeln zu rechnen, bedient man sich der Tafeln.

Man sucht zunächst aus IV 1 die zu T'' gehörige Dampfspannung e_1 und zieht hiervon eine Grösse e_2 ab, die aus Tabelle IV 2 erhalten wird, wenn man mit dem Barometerstand b in die horizontalen und mit der Temperaturdifferenz $T' - T''$ in die verticalen Columnen eingeht. Ist das Wasser am feuchten Thermometer gefroren, so bedient man sich der Grössen, welche aus dem zweiten Theile der Tabelle IV 2 entnommen werden. Man findet auf diese Weise für jede Station eine Dampfspannung σ ;

$$\sigma = e_1 - e_2;$$

man geht nun mit derselben ein in Tabelle IV 3, benutzt als gleichzeitiges Argument b und erhält die Grössen

$$\log \left(1 + 0.378 \frac{\sigma'}{b'} \right) \text{ und } \log \left(1 + 0.378 \frac{\sigma''}{b''} \right).$$

Das arithmetische Mittel führt man ein für das Glied C .

Statt dieses Verfahrens kann aber auch der Werth von C durch nur einmaliges Eingehen in die Tafel IV 3 aus σ' , σ'' , b' und b'' erhalten werden, wenn man $\frac{\sigma' + \sigma''}{2}$ als das eine, $\frac{b' + b''}{2}$ als das andere Argument wählt. —

Will man die Anwendung von Logarithmen bei Berechnung von Höhen vermeiden, so kann man sich der hypsometrischen Tafeln VI. bis XI. bedienen.

Dieselben sind auf folgende Weise erhalten worden:
Zunächst wird die Formel für barometrische Höhenmessungen:

$$h_{\text{met}} = 18400.2 \left(1.00157 + 0.03675 \frac{t' + t''}{2} \right) \cdot \left(1 + 0.378 \frac{\frac{\sigma'}{b'} + \frac{\sigma''}{b''}}{2} \right) \cdot (1 + 0.002623 \cos 2\psi) \cdot \left(1 + \frac{2z + h}{6378150} \right) \log \frac{b'}{b''}$$

in die Form gebracht:

$$h_{\text{met}} = 18429.1 \left(1 + 0.00183 [t' + t''] \right) \cdot \left(1 + 0.189 \left\{ \frac{\sigma'}{b'} + \frac{\sigma''}{b''} \right\} \right) (1 + 0.002623 \cos 2\psi) \cdot \left(1 + \frac{2z + h}{6378150} \right) \log \frac{b'}{b''}.$$

Setzt man nun:

$$18429.1 \log \frac{760}{b''} = A_{b''}$$

und $18429.1 \log \frac{760}{b'} = A_{b'}$

so ist $A_{b''} - A_{b'} = 18429.1 \log \frac{b'}{b''}$

Diese Grösse A_b ist in Tafel VI enthalten.

Der so erhaltene Werth ist ein genäherter Werth der Höhe

$$h_1 = A_{b''} - A_{b'}$$

Zu diesem Werthe fügt man nun hinzu die Grösse:

$$h_1 \cdot 0.00183 (t' + t'') = c_1$$

so ist $h_2 = h_1 + c_1$

ein etwas genauerer Näherungswerth der Höhe.

Die Grössen des Correctionsfactors, mit welchem h_1 zu multipliciren ist, um c_1 zu finden, sind in Tab. VII zusammengestellt.

Je nachdem $t' + t'' \geq 0$ ist, hat man dem Correctionsfactor einen positiven oder negativen Werth zu geben.

Um den so erhaltenen, genäheren Werth der Höhe wegen des Feuchtigkeitsgehaltes der Luft zu corrigiren,

bildet man zunächst die Werthe $0.189 \frac{\sigma'}{b'}$ und $0.189 \frac{\sigma''}{b''}$.

Dieselben werden der Tabelle IX entnommen. Mit ihrer Summe wird alsdann die Grösse h_2 multiplicirt, und es ergibt sich eine neue Verbesserung:

$$c_2 = h_2 \left\{ 0.189 \frac{\sigma'}{b'} + 0.189 \frac{\sigma''}{b''} \right\}$$

diese zu h^2 hinzu addirt, giebt eine weitere Annäherung:

$$h_3 = h_2 + c_2.$$

Diese Höhe h_3 ist noch zu verbessern mit einem Gliede wegen der Veränderlichkeit der Schwere nach der geographischen Breite, das ist um eine Grösse c_3 .

$$c_3 = h_3 \cdot 0.002623 \cos 2\psi.$$

Der Werth des mit h_3 zu multiplicirenden Factors ist nach Vorzeichen und Grösse der Tafel X zu entnehmen.

Es wird nun

$$h_4 = h_3 + c_3$$

gesetzt.

Um den wahren Werth h der Höhe zu erhalten, hat man noch eine vierte Correction c_4 hinzuzufügen, welche unmittelbar aus Tafel XI gefunden wird.

Alsdann ist

$$h = h_4 + c_4.$$

Die Rechnung geht fast ebenso rasch vor sich, als bei Anwendung von Logarithmen. und es hat diese Methode den Vorzug, dass man den Betrag jeder der Correctionen unmittelbar übersehen kann.«

S. 178. Siedepunct des Wassers bei verschiedenen Barometerständen. Diese kleine Tafel dient bei Untersuchungen von Thermometern zur Bestimmung der Temperatur, bei welcher das Wasser siedet; die Ausdehnung der Tafel reicht für diesen Zweck völlig aus.

S. 179—181. Reduction des altfranzösischen Barometers.

Diese, wie die 3 folgenden Tafeln, dienen zur Reduction der an Barometern mit messingner Scale beobachteten Höhen auf eine Normaltemperatur des Quecksilbers und der Scale. Es ist allgemein gebräuchlich, die Barometerhöhe auf eine Temperatur des Quecksilbers von 0° R zu reduciren; es ist ferner zu bemerken, dass die Normaltemperatur der Scale

1) bei dem altfranzösischen Maasse $+ 13^\circ$ R.,

2) bei dem metrischen Maasse 0° R.,

3) bei dem englischen Maasse 62° Fahr.

vorstellt und endlich, dass bei der Berechnung der Tafeln die Ausdehnung von 0° bis 80° Réaumur beim Messing $= 0.0018782$, beim Quecksilber $= 0.018018$ angenommen ist. Sei nun h die abgelesene Barometerhöhe, so wird die an dieselbe anzubringende Correction, die direct aus der Tafel mit den Argumenten Barometerhöhe und gemeinschaftliche Temperatur der Scale und des Quecksilbers entnommen wird, für das altfranzösische Barometer

$$= h \cdot \frac{0.0002252 t - 0.00002348 (t - 13)}{1 + 0.0002252 t} \quad (t = \text{Grade nach Réaumur.})$$

S. 182 u. 183. Reduction der Barometerhöhe in Millimetern.
Die Reduction ist

$$= h \cdot \frac{0.000161398 t}{1 + 0.00018018 t} \quad (t = \text{Grade nach } \textit{Celsius}.)$$

S. 184 — 191. Reduction des Englischen Barometers.
Die Reduction ist

$$= h \cdot \frac{0.0001001 (t - 32) - 0.00001043 (t - 62)}{1 + 0.0001001 (t - 32)} \\ (t = \text{Grade nach } \textit{Fahrenheit}.)$$

S. 192 — 197. Reduction des altfranzösischen Barometers
mit zwei Thermometern.

Die Reduction ist, wenn t die Temperatur des Quecksilbers, und τ die des Messings bezeichnet, beide in Graden nach *Réaumur* ausgedrückt,

$$= h \cdot 0.0002252 t + h \cdot 0.00002348 (\tau - 13^{\circ}).$$

S. 200 u. 201. Verwandlung der Barometer- und Thermometerscalen. Diese bedarf keiner Erläuterung.

Den Schluss des Buches bildet eine Zusammenstellung einiger häufig gebrauchten Formeln, und sind dieselben eingetheilt worden in

Goniometrische Formeln,
Trigonometrische Formeln,
Astronomische Reductionsformeln.

Bei den letzteren habe ich mich auf diejenigen beschränkt, welche bei Anwendung kleinerer Instrumente, namentlich auf Reisen zu Ortsbestimmungen dienen können. Es kommen hier in Betracht

das Passagen-Instrument im Meridian,
das Passagen-Instrument im Verticale des Polarsterns,
das Passagen-Instrument im ersten Verticale,
Höhen-Instrumente.

Es muss noch erwähnt werden, dass die Formeln zur Reduction der Zeitbestimmung mit dem Passagen-Instrumente im Verticale des Polarsterns von *Döllen* sind.

Bei diesen Formeln ist Rücksicht genommen ausser den Correctionen, die aus den Fehlern des Instrumentes hervorgehen, noch auf die tägliche Aberration. Refraction und Parallaxe sind nicht hinzugezogen, weil hierfür im ersten Theile des Buches Tafeln gegeben sind.

I.

T A F E L N.

2 Tafeln zur Verwandlung der mittleren Zeit u. Sternzeit. I.

0^h
1^h

	St. Zeit	Reduct.	St. Zeit	Reduct.	St. Zeit	Reduct.	St. Zeit	Reduct.
0'37'' 0''1	0' 37''	0' 0'' 1	30' 31''	0' 5'' 0	0' 26''	0' 9'' 9	30' 20''	0' 14'' 8
	1 13	0.2	31 8	5.1			30 57	14.9
	1 50	0.3	31 44	5.2	1 2	0 10.0		
	2 26	0.4	32 21	5.3	1 39	10.1	31 34	0 15.0
	3 3	0.5	32 58	5.4	2 16	10.2	32 10	15.1
	3 40	0.6	33 34	5.5	2 52	10.3	32 47	15.2
	4 16	0.7	34 11	5.6	3 29	10.4	33 24	15.3
	4 53	0.8	34 48	5.7	4 6	10.5	34 0	15.4
	5 30	0.9	35 24	5.8	4 42	10.6	34 37	15.5
			36 1	5.9	5 19	10.7	35 13	15.6
	6 6	0 1.0			5 55	10.8	35 50	15.7
	6 43	1.1	36 37	0 6.0	6 32	10.9	36 27	15.8
	7 19	1.2	37 14	6.1			37 3	15.9
	7 56	1.3	37 51	6.2	7 9	0 11.0		
	8 33	1.4	38 27	6.3	7 45	11.1	37 40	0 16.0
	9 9	1.5	39 4	6.4	8 22	11.2	38 17	16.1
	9 46	1.6	39 41	6.5	8 59	11.3	38 53	16.2
	10 23	1.7	40 17	6.6	9 35	11.4	39 30	16.3
	10 59	1.8	40 54	6.7	10 12	11.5	40 6	16.4
	11 36	1.9	41 30	6.8	10 48	11.6	40 43	16.5
			42 7	6.9	11 25	11.7	41 20	16.6
	12 12	0 2.0			12 2	11.8	41 56	16.7
	12 49	2.1	42 44	0 7.0	12 38	11.9	42 33	16.8
	13 26	2.2	43 20	7.1			43 9	16.9
	14 2	2.3	43 57	7.2	13 15	0 12.0		
	14 39	2.4	44 34	7.3	13 52	12.1	43 46	0 17.0
	15 16	2.5	45 10	7.4	14 28	12.2	44 23	17.1
	15 52	2.6	45 47	7.5	15 5	12.3	44 59	17.2
	16 29	2.7	46 23	7.6	15 41	12.4	45 36	17.3
	17 5	2.8	47 0	7.7	16 18	12.5	46 13	17.4
	17 42	2.9	47 37	7.8	16 55	12.6	46 49	17.5
			48 13	7.9	17 31	12.7	47 26	17.6
	18 19	0 3.0			18 8	12.8	48 2	17.7
	18 55	3.1	48 50	0 8.0	18 44	12.9	48 39	17.8
	19 32	3.2	49 27	8.1			49 16	17.9
	20 9	3.3	50 3	8.2	19 21	0 13.0		
	20 45	3.4	50 40	8.3	19 58	13.1	49 52	0 18.0
	21 22	3.5	51 16	8.4	20 34	13.2	50 29	18.1
	21 58	3.6	51 53	8.5	21 11	13.3	51 6	18.2
	22 35	3.7	52 30	8.6	21 48	13.4	51 42	18.3
	23 12	3.8	53 6	8.7	22 24	13.5	52 19	18.4
	23 48	3.9	53 43	8.8	23 1	13.6	52 55	18.5
			54 20	8.9	23 38	13.7	53 32	18.6
	24 25	0 4.0			24 14	13.8	54 9	18.7
	25 2	4.1	54 56	0 9.0	24 51	13.9	54 45	18.8
	25 38	4.2	55 33	9.1			55 22	18.9
	26 15	4.3	56 9	9.2	25 27	0 14.0		
	26 51	4.4	56 46	9.3	26 4	14.1	55 59	0 19.0
	27 28	4.5	57 23	9.4	26 41	14.2	56 35	19.1
	28 5	4.6	57 59	9.5	27 17	14.3	57 12	19.2
	28 41	4.7	58 36	9.6	27 54	14.4	57 48	19.3
	29 18	4.8	59 13	9.7	28 31	14.5	58 25	19.4
	29 55	4.9	59 49	9.8	29 7	14.6	59 2	19.5
					29 44	14.7	59 38	19.6

Tafeln zur Verwandlung der mittleren Zeit u. Sternzeit. I. 3

2 ^h				3 ^h			
St. Zeit	Reduct.	St. Zeit	Reduct.	St. Zeit	Reduct.	St. Zeit	Reduct.
0' 15''	0' 19''7	30' 10''	0' 24''6	0' 4''	0' 29''5	30' 35''	0' 34''5
0 52	19.8	30 46	24.7	0 41	29.6	31 12	34.6
1 28	19.9	31 23	24.8	1 17	29.7	31 49	34.7
		31 59	24.9	1 54	29.8	32 25	34.8
2 5	0 20.0			2 31	29.9	33 2	34.9
2 41	20.1	32 36	0 25.0				
3 18	20.2	33 13	25.1	3 7	0 30.0	33 38	0 35.0
3 55	20.3	33 49	25.2	3 44	30.1	34 15	35.1
4 31	20.4	34 26	25.3	4 21	30.2	34 52	35.2
5 8	20.5	35 3	25.4	4 57	30.3	35 28	35.3
5 45	20.6	35 39	25.5	5 34	30.4	36 5	35.4
6 21	20.7	36 16	25.6	6 10	30.5	36 42	35.5
6 58	20.8	36 52	25.7	6 47	30.6	37 18	35.6
7 34	20.9	37 29	25.8	7 24	30.7	37 55	35.7
		38 6	25.9	8 0	30.8	38 31	35.8
8 11	0 21.0			8 37	30.9	39 8	35.9
8 48	21.1	38 42	0 26.0				
9 24	21.2	39 19	26.1	9 14	0 31.0	39 45	0 36.0
10 1	21.3	39 56	26.2	9 50	31.1	40 21	36.1
10 38	21.4	40 32	26.3	10 27	31.2	40 58	36.2
11 14	21.5	41 9	26.4	11 3	31.3	41 35	36.3
11 51	21.6	41 45	26.5	11 40	31.4	42 11	36.4
12 27	21.7	42 22	26.6	12 17	31.5	42 48	36.5
13 4	21.8	42 59	26.7	12 53	31.6	43 24	36.6
13 41	21.9	43 35	26.8	13 30	31.7	44 1	36.7
		44 12	26.9	14 7	31.8	44 38	36.8
14 17	0 22.0			14 43	31.9	45 14	36.9
14 54	22.1	44 49	0 27.0				
15 31	22.2	45 25	27.1	15 20	0 32.0	45 51	0 37.0
16 7	22.3	46 2	27.2	15 56	32.1	46 28	37.1
16 44	22.4	46 38	27.3	16 33	32.2	47 4	37.2
17 20	22.5	47 15	27.4	17 10	32.3	47 41	37.3
17 57	22.6	47 52	27.5	17 46	32.4	48 17	37.4
18 34	22.7	48 28	27.6	18 23	32.5	48 54	37.5
19 10	22.8	49 5	27.7	19 0	32.6	49 31	37.6
19 47	22.9	49 42	27.8	19 36	32.7	50 7	37.7
		50 18	27.9	20 13	32.8	50 44	37.8
20 24	0 23.0			20 49	32.9	51 21	37.9
21 0	23.1	50 55	0 28.0				
21 37	23.2	51 31	28.1	21 26	0 33.0	51 57	0 38.0
22 13	23.3	52 8	28.2	22 3	33.1	52 34	38.1
22 50	23.4	52 45	28.3	22 39	33.2	53 10	38.2
23 27	23.5	53 21	28.4	23 16	33.3	53 47	38.3
24 3	23.6	53 58	28.5	23 52	33.4	54 24	38.4
24 40	23.7	54 35	28.6	24 29	33.5	55 0	38.5
25 17	23.8	55 11	28.7	25 6	33.6	55 37	38.6
25 53	23.9	55 48	28.8	25 42	33.7	56 14	38.7
		56 24	28.9	26 19	33.8	56 50	38.8
26 30	0 24.0			26 56	33.9	57 27	38.9
27 6	24.1	57 1	0 29.0				
27 43	24.2	57 38	29.1	27 32	0 34.0	58 3	0 39.0
28 20	24.3	58 14	29.2	28 9	34.1	58 40	39.1
28 56	24.4	58 51	29.3	28 45	34.2	59 17	39.2
29 33	24.5	59 28	29.4	29 22	34.3	59 53	39.3
				29 59	34.4		

4'' 0''01
7 0.02
11 0.03
15 0.04
18 0.05
22 0.06
26 0.07
29 0.08
33 0.09

4 Tafeln zur Verwandlung der mittleren Zeit u. Sternzeit. I.

4 ^h				5 ^h					
St. Zeit		Reduct.	St. Zeit	Reduct.	St. Zeit		Reduct.	St. Zeit	Reduct.
0' 37''	0'' 1	0' 30''	0' 39'' 4	30' 25	0' 44'' 3	0' 19'	0' 49'' 2	30' 14''	0' 54'' 1
1 13	0.2	1 7	39.5	31 1	44.4	0 56	49.3	30 50	54.2
		1 43	39.6	31 38	44.5	1 32	49.4	31 27	54.3
		2 20	39.7	32 14	44.6	2 9	49.5	32 4	54.4
		2 56	39.8	32 51	44.7	2 46	49.6	32 40	54.5
		3 33	39.9	33 28	44.8	3 22	49.7	33 17	54.6
				34 4	44.9	3 59	49.8	33 53	54.7
		4 10	40.0			4 35	49.9	34 30	54.8
		4 46	40.1	34 41	45.0			35 7	54.9
		5 23	40.2	35 18	45.1	5 12	50.0		
		6 0	40.3	35 54	45.2	5 49	50.1	35 43	55.0
		6 36	40.4	36 31	45.3	6 25	50.2	36 20	55.1
		7 13	40.5	37 7	45.4	7 2	50.3	36 57	55.2
		7 49	40.6	37 44	45.5	7 39	50.4	37 33	55.3
		8 26	40.7	38 21	45.6	8 15	50.5	38 10	55.4
		9 3	40.8	38 57	45.7	8 52	50.6	38 46	55.5
		9 39	40.9	39 34	45.8	9 28	50.7	39 23	55.6
				40 10	45.9	10 5	50.8	40 0	55.7
		10 16	41.0			10 42	50.9	40 36	55.8
		10 53	41.1	40 47	46.0			41 13	55.9
		11 29	41.2	41 24	46.1	11 18	51.0		
		12 6	41.3	42 0	46.2	11 55	51.1	41 50	56.0
		12 42	41.4	42 37	46.3	12 32	51.2	42 26	56.1
		13 19	41.5	43 14	46.4	13 8	51.3	43 3	56.2
		13 56	41.6	43 50	46.5	13 45	51.4	43 40	56.3
		14 32	41.7	44 27	46.6	14 21	51.5	44 16	56.4
		15 9	41.8	45 4	46.7	14 58	51.6	44 53	56.5
		15 46	41.9	45 40	46.8	15 35	51.7	45 29	56.6
				46 17	46.9	16 11	51.8	46 6	56.7
		16 22	42.0			16 48	51.9	46 43	56.8
		16 59	42.1	46 53	47.0			47 19	56.9
		17 35	42.2	47 30	47.1	17 25	52.0		
		18 12	42.3	48 7	47.2	18 1	52.1	47 56	57.0
		18 49	42.4	48 43	47.3	18 38	52.2	48 32	57.1
		19 25	42.5	49 20	47.4	19 14	52.3	49 9	57.2
		20 2	42.6	49 57	47.5	19 51	52.4	49 46	57.3
		20 39	42.7	50 33	47.6	20 28	52.5	50 22	57.4
		21 15	42.8	51 10	47.7	21 4	52.6	50 59	57.5
		21 52	42.9	51 46	47.8	21 41	52.7	51 36	57.6
				52 23	47.9	22 18	52.8	52 12	57.7
		22 28	43.0			22 54	52.9	52 49	57.8
		23 5	43.1	53 0	48.0			53 25	57.9
		23 42	43.2	53 36	48.1	23 31	53.0		
		24 18	43.3	54 13	48.2	24 7	53.1	54 2	58.0
		24 55	43.4	54 50	48.3	24 44	53.2	54 39	58.1
		25 32	43.5	55 26	48.4	25 21	53.3	55 15	58.2
		26 8	43.6	56 3	48.5	25 57	53.4	55 52	58.3
		26 45	43.7	56 39	48.6	26 34	53.5	56 29	58.4
		27 21	43.8	57 16	48.7	27 11	53.6	57 5	58.5
		27 58	43.9	57 53	48.8	27 47	53.7	57 42	58.6
				58 29	48.9	28 24	53.8	58 18	58.7
		28 35	44.0			29 0	53.9	58 55	58.8
		29 11	44.1	59 6	49.0			59 32	58.9
		29 48	44.2	59 43	49.1	29 37	54.0		

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6 ^h				7 ^h			
St. Zeit	Reduct.	St. Zeit	Reduct.	St. Zeit	Reduct.	St. Zeit	Reduct.
0' 8"	0' 59' 0"	30' 40"	1' 4' 0"	0' 34"	1' 8' 9"	30' 29"	1' 13' 8"
0 45	59.1	31 16	4.1			31 5	13.9
1 22	59.2	31 53	4.2	1 11	1 9.0		
1 58	59.3	32 29	4.3	1 47	9.1	31 42	1 14.0
2 35	59.4	33 6	4.4	2 24	9.2	32 19	14.1
3 11	59.5	33 43	4.5	3 1	9.3	32 55	14.2
3 48	59.6	34 19	4.6	3 37	9.4	33 32	14.3
4 25	59.7	34 56	4.7	4 14	9.5	34 8	14.4
5 1	59.8	35 33	4.8	4 50	9.6	34 45	14.5
5 38	59.9	36 9	4.9	5 27	9.7	35 22	14.6
				6 4	9.8	35 58	14.7
6 15	I 0.0	36 46	I 5.0	6 40	9.9	36 35	14.8
6 51	0.1	37 22	5.1			37 12	14.9
7 28	0.2	37 59	5.2	7 17	I 10.0		
8 4	0.3	38 36	5.3	7 54	10.1	37 48	I 15.0
8 41	0.4	39 12	5.4	8 30	10.2	38 25	15.1
9 18	0.5	39 49	5.5	9 7	10.3	39 1	15.2
9 54	0.6	40 26	5.6	9 43	10.4	39 38	15.3
10 31	0.7	41 2	5.7	10 20	10.5	40 15	15.4
11 8	0.8	41 39	5.8	10 57	10.6	40 51	15.5
11 44	0.9	42 15	5.9	11 33	10.7	41 28	15.6
				12 10	10.8	42 5	15.7
12 21	I 1.0	42 52	I 6.0	12 47	10.9	42 41	15.8
12 57	1.1	43 29	6.1			43 18	15.9
13 34	1.2	44 5	6.2	13 23	I 11.0		
14 11	1.3	44 42	6.3	14 0	11.1	43 54	I 16.0
14 47	1.4	45 18	6.4	14 36	11.2	44 31	16.1
15 24	1.5	45 55	6.5	15 13	11.3	45 8	16.2
16 1	1.6	46 32	6.6	15 50	11.4	45 44	16.3
16 37	1.7	47 8	6.7	16 26	11.5	46 21	16.4
17 14	1.8	47 45	6.8	17 3	11.6	46 58	16.5
17 50	.9	48 22	6.9	17 40	11.7	47 34	16.6
				18 16	11.8	48 11	16.7
18 27	I 2.0	48 58	I 7.0	18 53	11.9	48 47	16.8
19 4	2.1	49 35	7.1			49 24	16.9
19 40	2.2	50 11	7.2	19 29	I 12.0		
20 17	2.3	50 48	7.3	20 6	12.1	50 1	I 17.0
20 54	2.4	51 25	7.4	20 43	12.2	50 37	17.1
21 30	2.5	52 1	7.5	21 19	12.3	51 14	17.2
22 7	2.6	52 38	7.6	21 56	12.4	51 51	17.3
22 43	2.7	53 15	7.7	22 33	12.5	52 27	17.4
23 20	2.8	53 51	7.8	23 9	12.6	53 4	17.5
23 57	2.9	54 28	7.9	23 46	12.7	53 40	17.6
				24 22	12.8	54 17	17.7
24 33	I 3.0	55 4	I 8.0	24 59	12.9	54 54	17.8
25 10	3.1	55 41	8.1			55 30	17.9
25 47	3.2	56 18	8.2	25 36	I 13.0		
26 23	3.3	56 54	8.3	26 12	13.1	56 7	I 18.0
27 0	3.4	57 31	8.4	26 49	13.2	56 44	18.1
27 36	3.5	58 8	8.5	27 26	13.3	57 20	18.2
28 13	3.6	58 44	8.6	28 2	13.4	57 57	18.3
28 50	3.7	59 21	8.7	28 39	13.5	58 33	18.4
29 26	3.8	59 57	8.8	29 15	13.6	59 10	18.5
30 3	3.9			29 52	13.7	59 47	18.6

4"	0' 01
7	0.02
11	0.03
15	0.04
18	0.05
22	0.06
26	0.07
29	0.08
33	0.09

6 Tafeln zur Verwandlung der mittleren Zeit u. Sternzeit. I.

1'13" | 0'2
1 50 | 0.3

8 ^h				9 ^h			
St. Zeit	Reduct.	St. Zeit	Reduct.	St. Zeit	Reduct.	St. Zeit	Reduct.
0' 23"	1' 18' 7	30' 18"	1' 23' 6	0' 12"	1' 28' 5	30' 7"	1' 33' 4
1 0	18.8	30 54	23.7	0 49	28.6	30 44	33.5
1 36	18.9	31 31	23.8	1 26	28.7	31 20	33.6
		32 8	23.9	2 2	28.8	31 57	33.7
2 13	1 19.0			2 39	28.9	32 34	33.8
2 50	19.1	32 44	1 24.0			33 10	33.9
3 26	19.2	33 21	24.1	3 16	1 29.0		
4 3	19.3	33 58	24.2	3 52	29.1	33 47	1 34.0
4 40	19.4	34 34	24.3	4 29	29.2	34 23	34.1
5 16	19.5	35 11	24.4	5 6	29.3	35 0	34.2
5 53	19.6	35 47	24.5	5 42	29.4	35 37	34.3
6 30	19.7	36 24	24.6	6 19	29.5	36 13	34.4
7 6	19.8	37 1	24.7	6 55	29.6	36 50	34.5
7 43	19.9	37 37	24.8	7 32	29.7	37 27	34.6
		38 14	24.9	8 9	29.8	38 3	34.7
8 19	1 20.0			8 45	29.9	38 40	34.8
8 56	20.1	38 51	1 25.0			39 16	34.9
9 33	20.2	39 27	25.1	9 22	1 30.0		
10 9	20.3	40 4	25.2	9 58	30.1	39 53	1 35.0
10 46	20.4	40 40	25.3	10 35	30.2	40 30	35.1
11 23	20.5	41 17	25.4	11 12	30.3	41 6	35.2
11 59	20.6	41 54	25.5	11 48	30.4	41 43	35.3
12 36	20.7	42 30	25.6	12 25	30.5	42 20	35.4
13 12	20.8	43 7	25.7	13 2	30.6	42 56	35.5
13 49	20.9	43 44	25.8	13 38	30.7	43 33	35.6
		44 20	25.9	14 15	30.8	44 9	35.7
14 26	1 21.0			14 51	30.9	44 46	35.8
15 2	21.1	44 57	1 26.0			45 23	35.9
15 39	21.2	45 33	26.1	15 28	1 31.0		
16 16	21.3	46 10	26.2	16 5	31.1	45 59	1 36.0
16 52	21.4	46 47	26.3	16 41	31.2	46 36	36.1
17 29	21.5	47 23	26.4	17 18	31.3	47 13	36.2
18 5	21.6	48 0	26.5	17 55	31.4	47 49	36.3
18 42	21.7	48 37	26.6	18 31	31.5	48 26	36.4
19 19	21.8	49 13	26.7	19 8	31.6	49 2	36.5
19 55	21.9	49 50	26.8	19 44	31.7	49 39	36.6
		50 26	26.9	20 21	31.8	50 16	36.7
20 32	1 22.0			20 58	31.9	50 52	36.8
21 9	22.1	51 3	1 27.0			51 29	36.9
21 45	22.2	51 40	27.1	21 34	1 32.0		
22 22	22.3	52 16	27.2	22 11	32.1	52 6	1 37.0
22 58	22.4	52 53	27.3	22 48	32.2	52 42	37.1
23 35	22.5	53 30	27.4	23 24	32.3	53 19	37.2
24 12	22.6	54 6	27.5	24 1	32.4	53 55	37.3
24 48	22.7	54 43	27.6	24 37	32.5	54 32	37.4
25 25	22.8	55 19	27.7	25 14	32.6	55 9	37.5
26 1	22.9	55 56	27.8	25 51	32.7	55 45	37.6
		56 33	27.9	26 27	32.8	56 22	37.7
26 38	1 23.0			27 4	32.9	56 59	37.8
27 15	23.1	57 9	1 28.0			57 35	37.9
27 51	23.2	57 46	28.1	27 41	1 33.0		
28 28	23.3	58 23	28.2	28 17	33.1	58 12	1 38.0
29 5	23.4	58 59	28.3	28 54	33.2	58 48	38.1
29 41	23.5	59 36	28.4	29 30	33.3	59 25	38.2

10 ^h				11 ^h			
St. Zeit	Reduct.	St. Zeit	Reduct.	St. Zeit	Reduct.	St. Zeit	Reduct.
0' 2"	1' 38''3	30' 33"	1' 43''3	0' 27"	1' 48''2	30' 22"	1' 53''1
0 38	38.4	31 9	43.4	1 4	48.3	30 59	53.2
1 15	38.5	31 46	43.5	1 41	48.4	31 35	53.3
1 52	38.6	32 23	43.6	2 17	48.5	32 12	53.4
2 28	38.7	32 59	43.7	2 54	48.6	32 49	53.5
3 5	38.8	33 36	43.8	3 31	48.7	33 25	53.6
3 41	38.9	34 13	43.9	4 7	48.8	34 2	53.7
				4 44	48.9	34 38	53.8
						35 15	53.9
4 18	I 39.0	34 49	I 44.0	5 20	I 49.0		
4 55	39.1	35 26	44.1	5 57	49.1	35 52	I 54.0
5 31	39.2	36 2	44.2	6 34	49.2	36 28	54.1
6 8	39.3	36 39	44.3	7 10	49.3	37 5	54.2
6 44	39.4	37 16	44.4	7 47	49.4	37 42	54.3
7 21	39.5	37 52	44.5	8 24	49.5	38 18	54.4
7 58	39.6	38 29	44.6	9 0	49.6	38 55	54.5
8 34	39.7	39 6	44.7	9 37	49.7	39 31	54.6
9 11	39.8	39 42	44.8	10 13	49.8	40 8	54.7
9 48	39.9	40 19	44.9	10 50	49.9	40 45	54.8
						41 21	54.9
10 24	I 40.0	40 55	I 45.0	11 27	I 50.0		
11 1	40.1	41 32	45.1	12 3	50.1	41 58	I 55.0
11 37	40.2	42 9	45.2	12 40	50.2	42 35	55.1
12 14	40.3	42 45	45.3	13 17	50.3	43 11	55.2
12 51	40.4	43 22	45.4	13 53	50.4	43 48	55.3
13 27	40.5	43 59	45.5	14 30	50.5	44 24	55.4
14 4	40.6	44 35	45.6	15 6	50.6	45 1	55.5
14 41	40.7	45 12	45.7	15 43	50.7	45 38	55.6
15 17	40.8	45 48	45.8	16 20	50.8	46 14	55.7
15 54	40.9	46 25	45.9	16 56	50.9	46 51	55.8
						47 27	55.9
16 30	I 41.0	47 2	I 46.0	17 33	I 51.0		
17 7	41.1	47 38	46.1	18 10	51.1	48 4	I 56.0
17 44	41.2	48 15	46.2	18 46	51.2	48 41	56.1
18 20	41.3	48 52	46.3	19 23	51.3	49 17	56.2
18 57	41.4	49 28	46.4	19 59	51.4	49 54	56.3
19 34	41.5	50 5	46.5	20 36	51.5	50 31	56.4
20 10	41.6	50 41	46.6	21 13	51.6	51 7	56.5
20 47	41.7	51 18	46.7	21 49	51.7	51 44	56.6
21 23	41.8	51 55	46.8	22 26	51.8	52 20	56.7
22 0	41.9	52 31	46.9	23 2	51.9	52 57	56.8
						53 34	56.9
22 37	I 42.0	53 8	I 47.0	23 39	I 52.0		
23 13	42.1	53 45	47.1	24 16	52.1	54 10	I 57.0
23 50	42.2	54 21	47.2	24 52	52.2	54 47	57.1
24 27	42.3	54 58	47.3	25 29	52.3	55 24	57.2
25 3	42.4	55 34	47.4	26 6	52.4	56 0	57.3
25 40	42.5	56 11	47.5	26 42	52.5	56 37	57.4
26 16	42.6	56 48	47.6	27 19	52.6	57 13	57.5
26 53	42.7	57 24	47.7	27 56	52.7	57 50	57.6
27 30	42.8	58 1	47.8	28 32	52.8	58 27	57.7
28 6	42.9	58 38	47.9	29 9	52.9	59 3	57.8
						59 40	57.9
28 43	I 43.0	59 14	I 48.0	29 45	I 53.0		
29 20	43.1	59 51	48.1				
29 56	43.2						

4"	0''01
7	0.02
11	0.03
15	0.04
18	0.05
22	0.06
26	0.07
29	0.08
33	0.09

8 Tafeln zur Verwandlung der mittleren Zeit u. Sternzeit. I.

12 ^h				13 ^h			
St. Zeit		Reduct.	St. Zeit	Reduct.	St. Zeit		Reduct.
1' 50''	0'' 3	0' 17''	1' 58'' 0	30' 11''	2' 2'' 9	0' 6''	2' 7'' 8
2 26	0.4	0 53	58.1		0 42	7.9	31 14
		1 30	58.2	30 48			
		2 6	58.3	31 24	2 3.0		
		2 43	58.4	32 1	3.1	2 8.0	31 50
		3 20	58.5	32 38	3.2	2 8.1	32 27
		3 56	58.6	33 14	3.3	2 8.2	33 3
		4 33	58.7	33 51	3.4	3 9	33 40
		5 10	58.8	34 28	3.5	3 46	34 17
		5 46	58.9	35 4	3.6	4 22	34 53
				35 41	3.7	4 59	35 30
				36 17	3.8	5 35	36 7
		6 23	59.0		3.9	6 12	36 43
		6 59	59.1			6 49	37 20
		7 36	59.2	36 54	2 4.0		
		8 13	59.3	37 31	4.1	7 25	37 56
		8 49	59.4	38 7	4.2	8 2	38 33
		9 26	59.5	38 44	4.3	8 39	39 10
		10 3	59.6	39 21	4.4	9 15	39 46
		10 39	59.7	39 57	4.5	9 52	40 23
		11 16	59.8	40 34	4.6	10 28	41 0
		11 52	59.9	41 10	4.7	11 5	41 36
				41 47	4.8	11 42	42 13
				42 24	4.9	12 18	42 49
		12 29	0.0			12 55	43 26
		13 6	0.1				
		13 42	0.2	43 0	2 5.0		
		14 19	0.3	43 37	5.1	13 32	44 3
		14 56	0.4	44 14	5.2	14 8	44 39
		15 32	0.5	44 50	5.3	14 45	45 16
		16 9	0.6	45 27	5.4	15 21	45 53
		16 45	0.7	46 3	5.5	15 58	46 29
		17 22	0.8	46 40	5.6	16 35	47 6
		17 59	0.9	47 17	5.7	17 11	47 42
				47 53	5.8	17 48	48 19
				48 30	5.9	18 25	48 56
		18 35	1.0			19 1	49 32
		19 12	1.1	49 7	2 6.0		
		19 49	1.2	49 43	6.1	19 38	50 9
		20 25	1.3	50 20	6.2	20 14	50 46
		21 2	1.4	50 56	6.3	20 51	51 22
		21 38	1.5	51 33	6.4	21 28	51 59
		22 15	1.6	52 10	6.5	22 4	52 35
		22 52	1.7	52 46	6.6	22 41	53 12
		23 28	1.8	53 23	6.7	23 18	53 49
		24 5	1.9	54 0	6.8	23 54	54 25
				54 36	6.9	24 31	55 2
		24 42	2.0			25 7	55 39
		25 18	2.1	55 13	2 7.0		
		25 55	2.2	55 49	7.1	25 44	56 15
		26 32	2.3	56 26	7.2	26 21	56 52
		27 8	2.4	57 3	7.3	26 57	57 28
		27 45	2.5	57 39	7.4	27 34	58 5
		28 21	2.6	58 16	7.5	28 10	58 42
		28 58	2.7	58 53	7.6	28 47	59 18
		29 35	2.8	59 29	7.7	29 24	59 55
						30 0	12.7

14 ^h				15 ^h					
St. Zeit	Reduct.	St. Zeit	Reduct.	St. Zeit	Reduct.	St. Zeit	Reduct.		
0' 32''	2' 17''7	30' 26''	2' 22''6	0' 21''	2' 27''5	30' 15''	2' 32''4	4''	0''01
1 8	17.8	31 3	22.7	0 57	27.6	30 52	32.5	7	0.02
1 45	17.9	31 39	22.8	1 34	27.7	31 29	32.6	11	0.03
		32 16	22.9	2 11	27.8	32 5	32.7	15	0.04
2 21	2 18.0			2 47	27.9	32 42	32.8	18	0.05
2 58	18.1	32 53	2 23.0			33 18	32.9	22	0.06
3 35	18.2	33 29	23.1	3 24	2 28.0			26	0.07
4 11	18.3	34 6	23.2	4 1	28.1	33 55	2 33.0	29	0.08
4 48	18.4	34 43	23.3	4 37	28.2	34 32	33.1	33	0.09
5 25	18.5	35 19	23.4	5 14	28.3	35 8	33.2		
6 1	18.6	35 56	23.5	5 50	28.4	35 45	33.3		
6 38	18.7	36 32	23.6	6 27	28.5	36 22	33.4		
7 14	18.8	37 9	23.7	7 4	28.6	36 58	33.5		
7 51	18.9	37 46	23.8	7 40	28.7	37 35	33.6		
		38 22	23.9	8 17	28.8	38 11	33.7		
8 28	2 19.0			8 53	28.9	38 48	33.8		
9 4	19.1	38 59	2 24.0			39 25	33.9		
9 41	19.2	39 36	24.1	9 30	2 29.0				
10 18	19.3	40 12	24.2	10 7	29.1	40 1	2 34.0		
10 54	19.4	40 49	24.3	10 43	29.2	40 38	34.1		
11 31	19.5	41 25	24.4	11 20	29.3	41 15	34.2		
12 7	19.6	42 2	24.5	11 57	29.4	41 51	34.3		
12 44	19.7	42 39	24.6	12 33	29.5	42 28	34.4		
13 21	19.8	43 15	24.7	13 10	29.6	43 4	34.5		
13 57	19.9	43 52	24.8	13 46	29.7	43 41	34.6		
		44 28	24.9	14 23	29.8	44 18	34.7		
14 34	2 20.0			15 0	29.9	44 54	34.8		
15 11	20.1	45 5	2 25.0			45 31	34.9		
15 47	20.2	45 42	25.1	15 36	2 30.0				
16 24	20.3	46 18	25.2	16 13	30.1	46 8	2 35.0		
17 0	20.4	46 55	25.3	16 50	30.2	46 44	35.1		
17 37	20.5	47 32	25.4	17 26	30.3	47 21	35.2		
18 14	20.6	48 8	25.5	18 3	30.4	47 58	35.3		
18 50	20.7	48 45	25.6	18 39	30.5	48 34	35.4		
19 27	20.8	49 22	25.7	19 16	30.6	49 11	35.5		
20 4	20.9	49 58	25.8	19 53	30.7	49 47	35.6		
		50 35	25.9	20 29	30.8	50 24	35.7		
20 40	2 21.0			21 6	30.9	51 1	35.8		
21 17	21.1	51 11	2 26.0			51 37	35.9		
21 53	21.2	51 48	26.1	21 43	2 31.0				
22 30	21.3	52 25	26.2	22 19	31.1	52 14	2 36.0		
23 7	21.4	53 1	26.3	22 56	31.2	52 50	36.1		
23 43	21.5	53 38	26.4	23 32	31.3	53 27	36.2		
24 20	21.6	54 15	26.5	24 9	31.4	54 4	36.3		
24 57	21.7	54 51	26.6	24 46	31.5	54 40	36.4		
25 33	21.8	55 28	26.7	25 22	31.6	55 17	36.5		
26 10	21.9	56 4	26.8	25 59	31.7	55 54	36.6		
		56 41	26.9	26 36	31.8	56 30	36.7		
26 46	2 22.0			27 12	31.9	57 7	36.8		
27 23	22.1	57 18	2 27.0			57 44	36.9		
28 0	22.2	57 54	27.1	27 49	2 32.0				
28 36	22.3	58 31	27.2	28 25	32.1	58 20	2 37.0		
29 13	22.4	59 8	27.3	29 2	32.2	58 57	37.1		
29 50	22.5	59 44	27.4	29 39	32.3	59 33	37.2		

10 Tafeln zur Verwandlung der mittleren Zeit u. Sternzeit. I.

16^h

17^h

16 ^h				17 ^h				
St. Zeit		Reduct.	St. Zeit	Reduct.	St. Zeit	Reduct.	St. Zeit	Reduct.
2' 26''	0' 4							
3 3	0.5							
0 10''	2' 37''3		30' 41''	2' 42''3	0' 36''	2' 47''2	30' 30''	2' 52''1
0 47	37.4		31 18	42.4	1 12	47.3	31 7	52.2
1 23	37.5		31 54	42.5	1 49	47.4	31 44	52.3
2 0	37.6		32 31	42.6	2 26	47.5	32 20	52.4
2 36	37.7		33 8	42.7	3 2	47.6	32 57	52.5
3 13	37.8		33 44	42.8	3 39	47.7	33 33	52.6
3 50	37.9		34 21	42.9	4 15	47.8	34 10	52.7
					4 52	47.9	34 47	52.8
4 26	2 38.0		34 58	2 43.0			35 23	52.9
5 3	38.1		35 34	43.1	5 29	2 48.0		
5 40	38.2		36 11	43.2	6 5	48.1	36 0	2 53.0
6 16	38.3		36 47	43.3	6 42	48.2	36 37	53.1
6 53	38.4		37 24	43.4	7 19	48.3	37 13	53.2
7 29	38.5		38 1	43.5	7 55	48.4	37 50	53.3
8 6	38.6		38 37	43.6	8 32	48.5	38 26	53.4
8 43	38.7		39 14	43.7	9 8	48.6	39 3	53.5
9 19	38.8		39 51	43.8	9 45	48.7	39 40	53.6
9 56	38.9		40 27	43.9	10 22	48.8	40 16	53.7
					10 58	48.9	40 53	53.8
10 33	2 39.0		41 4	2 44.0			41 30	53.9
11 9	39.1		41 40	44.1	11 35	2 49.0		
11 46	39.2		42 17	44.2	12 12	49.1	42 6	2 54.0
12 22	39.3		42 54	44.3	12 48	49.2	42 43	54.1
12 59	39.4		43 30	44.4	13 25	49.3	43 19	54.2
13 36	39.5		44 7	44.5	14 1	49.4	43 56	54.3
14 12	39.6		44 44	44.6	14 38	49.5	44 33	54.4
14 49	39.7		45 20	44.7	15 15	49.6	45 9	54.5
15 26	39.8		45 57	44.8	15 51	49.7	45 46	54.6
16 2	39.9		46 33	44.9	16 28	49.8	46 23	54.7
					17 5	49.9	46 59	54.8
16 39	2 40.0		47 10	2 45.0			47 36	54.9
17 15	40.1		47 47	45.1	17 41	2 50.0		
17 52	40.2		48 23	45.2	18 18	50.1	48 12	2 55.0
18 29	40.3		49 0	45.3	18 54	50.2	48 49	55.1
19 5	40.4		49 36	45.4	19 31	50.3	49 26	55.2
19 42	40.5		50 13	45.5	20 8	50.4	50 2	55.3
20 19	40.6		50 50	45.6	20 44	50.5	50 39	55.4
20 55	40.7		51 26	45.7	21 21	50.6	51 16	55.5
21 32	40.8		52 3	45.8	21 58	50.7	51 52	55.6
22 8	40.9		52 40	45.9	22 34	50.8	52 29	55.7
					23 11	50.9	53 5	55.8
22 45	2 41.0		53 16	2 46.0			53 42	55.9
23 22	41.1		53 53	46.1	23 47	2 51.0		
23 58	41.2		54 29	46.2	24 24	51.1	54 19	2 56.0
24 35	41.3		55 6	46.3	25 1	51.2	54 55	56.1
25 12	41.4		55 43	46.4	25 37	51.3	55 32	56.2
25 48	41.5		56 19	46.5	26 14	51.4	56 9	56.3
26 25	41.6		56 56	46.6	26 51	51.5	56 45	56.4
27 1	41.7		57 33	46.7	27 27	51.6	57 22	56.5
27 38	41.8		58 9	46.8	28 4	51.7	57 58	56.6
28 15	41.9		58 46	46.9	28 40	51.8	58 35	56.7
					29 17	51.9	59 12	56.8
28 51	2 42.0		59 22	2 47.0			59 48	56.9
29 28	42.1		59 59	47.1	29 54	2 52.0		
30 5	42.2							

18 ^h				19 ^h					
St. Zeit	Reduct.	St. Zeit	Reduct.	St. Zeit	Reduct.	St. Zeit	Reduct.		
0' 25"	2' 57.0	30' 19"	3' 1.9	0' 14"	3' 6.8	30' 9"	3' 11.7	4"	0.01
1 2	57.1			0 51	6.9	30 45	11.8	7	0.02
1 38	57.2	30 56	3 2.0			31 22	11.9	11	0.03
2 15	57.3	31 33	2.1	1' 27	3 7.0			15	0.04
2 51	57.4	32 9	2.2	2 4	7.1	31 59	3 12.0	18	0.05
3 28	57.5	32 46	2.3	2 41	7.2	32 35	12.1	22	0.06
4 5	57.6	33 23	2.4	3 17	7.3	33 12	12.2	26	0.07
4 41	57.7	33 59	2.5	3 54	7.4	33 48	12.3	29	0.08
5 18	57.8	34 36	2.6	4 30	7.5	34 25	12.4	33	0.09
5 54	57.9	35 12	2.7	5 7	7.6	35 2	12.5		
		35 49	2.8	5 44	7.7	35 38	12.6		
		36 26	2.9	6 20	7.8	36 15	12.7		
6 31	2 58.0			6 57	7.9	36 52	12.8		
7 8	58.1					37 28	12.9		
7 44	58.2	37 2	3 3.0						
8 21	58.3	37 39	3.1	7 34	3 8.0				
8 58	58.4	38 16	3.2	8 10	8.1	38 5	3 13.0		
9 34	58.5	38 52	3.3	8 47	8.2	38 41	13.1		
10 11	58.6	39 29	3.4	9 24	8.3	39 18	13.2		
10 48	58.7	40 5	3.5	10 0	8.4	39 55	13.3		
11 24	58.8	40 42	3.6	10 37	8.5	40 31	13.4		
12 1	58.9	41 19	3.7	11 13	8.6	41 8	13.5		
		41 55	3.8	11 50	8.7	41 45	13.6		
		42 32	3.9	12 27	8.8	42 21	13.7		
12 37	2 59.0			13 3	8.9	42 58	13.8		
13 14	59.1					43 34	13.9		
13 51	59.2	43 9	3 4.0						
14 27	59.3	43 45	4.1	13 40	3 9.0				
15 4	59.4	44 22	4.2	14 16	9.1	44 11	3 14.0		
15 41	59.5	44 58	4.3	14 53	9.2	44 48	14.1		
16 17	59.6	45 35	4.4	15 30	9.3	45 24	14.2		
16 54	59.7	46 12	4.5	16 6	9.4	46 1	14.3		
17 30	59.8	46 48	4.6	16 43	9.5	46 38	14.4		
18 7	59.9	47 25	4.7	17 20	9.6	47 14	14.5		
		48 2	4.8	17 56	9.7	47 51	14.6		
		48 38	4.9	18 33	9.8	48 27	14.7		
18 44	3 0.0			19 10	9.9	49 4	14.8		
19 20	0.1	49 15	3 5.0			49 41	14.9		
19 57	0.2	49 52	5.1	19 46	3 10.0				
20 34	0.3	50 28	5.2	20 23	10.1	50 17	3 15.0		
21 10	0.4	51 5	5.3	20 59	10.2	50 54	15.1		
21 47	0.5	51 41	5.4	21 36	10.3	51 31	15.2		
22 23	0.6	52 18	5.5	22 13	10.4	52 7	15.3		
23 0	0.7	52 55	5.6	22 49	10.5	52 44	15.4		
23 37	0.8	53 31	5.7	23 26	10.6	53 20	15.5		
24 13	0.9	54 8	5.8	24 2	10.7	53 57	15.6		
		54 44	5.9	24 39	10.8	54 34	15.7		
24 50	3 1.0			25 16	10.9	55 10	15.8		
25 27	1.1	55 21	3 6.0			55 47	15.9		
26 3	1.2	55 58	6.1	25 52	3 11.0				
26 40	1.3	56 34	6.2	26 29	11.1	56 24	3 16.0		
27 16	1.4	57 11	6.3	27 6	11.2	57 0	16.1		
27 53	1.5	57 48	6.4	27 42	11.3	57 37	16.2		
28 30	1.6	58 24	6.5	28 19	11.4	58 13	16.3		
29 6	1.7	59 1	6.6	28 55	11.5	58 50	16.4		
29 43	1.8	59 37	6.7	29 32	11.6	59 27	16.5		

12 Tafeln zur Verwandlung der mittleren Zeit u. Sternzeit. I.

20 ^h				21 ^h				
St. Zeit	Reduct.	St. Zeit	Reduct.	St. Zeit	Reduct.	St. Zeit	Reduct.	
3' 3'' 0 ^u 5	0' 3''	3' 16 ^u 6	30' 34''	3' 21 ^u 6	0' 29''	3' 26 ^u 5	30' 24''	3' 31 ^u 4
3 40 0.6	0 40	16.7	31 11	21.7	1 6	26.6	31 0	31.5
	1 17	16.8	31 48	21.8	1 42	26.7	31 37	31.6
	1 53	16.9	32 24	21.9	2 19	26.8	32 14	31.7
					2 56	26.9	32 50	31.8
							33 27	31.9
	2 30	3 17.0	33 1	3 22.0				
	3 6	17.1	33 38	22.1	3 32	3 27.0		
	3 43	17.2	34 14	22.2	4 9	27.1	34 3	3 32.0
	4 20	17.3	34 51	22.3	4 45	27.2	34 40	32.1
	4 56	17.4	35 27	22.4	5 22	27.3	35 17	32.2
	5 33	17.5	36 4	22.5	5 59	27.4	35 53	32.3
	6 10	17.6	36 41	22.6	6 35	27.5	36 30	32.4
	6 46	17.7	37 17	22.7	7 12	27.6	37 7	32.5
	7 23	17.8	37 54	22.8	7 49	27.7	37 43	32.6
	7 59	17.9	38 31	22.9	8 25	27.8	38 20	32.7
					9 2	27.9	38 56	32.8
							39 33	32.9
	8 36	3 18.0	39 7	3 23.0				
	9 13	18.1	39 44	23.1	9 38	3 28.0		
	9 49	18.2	40 20	23.2	10 15	28.1	40 10	3 33.0
	10 26	18.3	40 57	23.3	10 52	28.2	40 46	33.1
	11 2	18.4	41 34	23.4	11 28	28.3	41 23	33.2
	11 39	18.5	42 10	23.5	12 5	28.4	42 0	33.3
	12 16	18.6	42 47	23.6	12 42	28.5	42 36	33.4
	12 52	18.7	43 24	23.7	13 18	28.6	43 13	33.5
	13 29	18.8	44 0	23.8	13 55	28.7	43 49	33.6
	14 6	18.9	44 37	23.9	14 31	28.8	44 26	33.7
					15 8	28.9	45 3	33.8
							45 39	33.9
	14 42	3 19.0	45 13	3 24.0				
	15 19	19.1	45 50	24.1	15 45	3 29.0		
	15 55	19.2	46 27	24.2	16 21	29.1	46 16	3 34.0
	16 32	19.3	47 3	24.3	16 58	29.2	46 53	34.1
	17 9	19.4	47 40	24.4	17 35	29.3	47 29	34.2
	17 45	19.5	48 17	24.5	18 11	29.4	48 6	34.3
	18 22	19.6	48 53	24.6	18 48	29.5	48 42	34.4
	18 59	19.7	49 30	24.7	19 24	29.6	49 19	34.5
	19 35	19.8	50 6	24.8	20 1	29.7	49 56	34.6
	20 12	19.9	50 43	24.9	20 38	29.8	50 32	34.7
					21 14	29.9	51 9	34.8
							51 46	34.9
	20 48	3 20.0	51 20	3 25.0				
	21 25	20.1	51 56	25.1	21 51	3 30.0		
	22 2	20.2	52 33	25.2	22 28	30.1	52 22	3 35.0
	22 38	20.3	53 10	25.3	23 4	30.2	52 59	35.1
	23 15	20.4	53 46	25.4	23 41	30.3	53 35	35.2
	23 52	20.5	54 23	25.5	24 17	30.4	54 12	35.3
	24 28	20.6	54 59	25.6	24 54	30.5	54 49	35.4
	25 5	20.7	55 36	25.7	25 31	30.6	55 25	35.5
	25 41	20.8	56 13	25.8	26 7	30.7	56 2	35.6
	26 18	20.9	56 49	25.9	26 44	30.8	56 39	35.7
					27 20	30.9	57 15	35.8
							57 52	35.9
	26 55	3 21.0	57 26	3 26.0				
	27 31	21.1	58 3	26.1	27 57	3 31.0		
	28 8	21.2	58 39	26.2	28 34	31.1	58 28	3 36.0
	28 45	21.3	59 16	26.3	29 10	31.2	59 5	36.1
	29 21	21.4	59 52	26.4	29 47	31.3	59 42	36.2
	29 58	21.5						

22 ^h				23 ^h					
St. Zeit	Reduct.	St. Zeit	Reduct.	St. Zeit	Reduct.	St. Zeit	Reduct.		
0' 18"	3' 36"3	30' 13"	3' 41"2	0' 7"	3' 46"1	30' 2"	3' 51"0	4"	0"01
0 55	36.4	30 50	41.3	0 44	46.2	30 39	51.1	7	0.02
1 31	36.5	31 26	41.4	1 21	46.3	31 15	51.2	11	0.03
2 8	36.6	32 3	41.5	1 57	46.4	31 52	51.3	15	0.04
2 45	36.7	32 39	41.6	2 34	46.5	32 28	51.4	18	0.05
3 21	36.8	33 16	41.7	3 11	46.6	33 5	51.5	22	0.06
3 58	36.9	33 53	41.8	3 47	46.7	33 42	51.6	26	0.07
		34 29	41.9	4 24	46.8	34 18	51.7	29	0.08
4 35	37.0			5 0	46.9	34 55	51.8	33	0.09
5 11	37.1	35 6	3 42.0			35 32	51.9		
5 48	37.2	35 42	42.1	5 37	3 47.0				
6 24	37.3	36 19	42.2	6 14	47.1	36 8	3 52.0		
7 1	37.4	36 56	42.3	6 50	47.2	36 45	52.1		
7 38	37.5	37 32	42.4	7 27	47.3	37 21	52.2		
8 14	37.6	38 9	42.5	8 4	47.4	37 58	52.3		
8 51	37.7	38 46	42.6	8 40	47.5	38 35	52.4		
9 28	37.8	39 22	42.7	9 17	47.6	39 11	52.5		
10 4	37.9	39 59	42.8	9 53	47.7	39 48	52.6		
		40 35	42.9	10 30	47.8	40 25	52.7		
10 41	3 38.0			11 7	47.9	41 1	52.8		
11 17	38.1	41 12	3 43.0			41 38	52.9		
11 54	38.2	41 49	43.1	11 43	3 48.0				
12 31	38.3	42 25	43.2	12 20	48.1	42 14	3 53.0		
13 7	38.4	43 2	43.3	12 57	48.2	42 51	53.1		
13 44	38.5	43 39	43.4	13 33	48.3	43 28	53.2		
14 21	38.6	44 15	43.5	14 10	48.4	44 4	53.3		
14 57	38.7	44 52	43.6	14 46	48.5	44 41	53.4		
15 34	38.8	45 28	43.7	15 23	48.6	45 18	53.5		
16 10	38.9	46 5	43.8	16 0	48.7	45 54	53.6		
		46 42	43.9	16 36	48.8	46 31	53.7		
16 47	3 39.0			17 13	48.9	47 7	53.8		
17 24	39.1	47 18	3 44.0			47 44	53.9		
18 0	39.2	47 55	44.1	17 50	3 49.0				
18 37	39.3	48 32	44.2	18 26	49.1	48 21	3 54.0		
19 14	39.4	49 8	44.3	19 3	49.2	48 57	54.1		
19 50	39.5	49 45	44.4	19 39	49.3	49 34	54.2		
20 27	39.6	50 21	44.5	20 16	49.4	50 11	54.3		
21 3	39.7	50 58	44.6	20 53	49.5	50 47	54.4		
21 40	39.8	51 35	44.7	21 29	49.6	51 24	54.5		
22 17	39.9	52 11	44.8	22 6	49.7	52 0	54.6		
		52 48	44.9	22 43	49.8	52 37	54.7		
22 53	3 40.0			23 19	49.9	53 14	54.8		
23 30	40.1	53 25	3 45.0			53 50	54.9		
24 7	40.2	54 1	45.1	23 56	3 50.0	54 27	3 55.0		
24 43	40.3	54 38	45.2	24 32	50.1	55 4	55.1		
25 20	40.4	55 14	45.3	25 9	50.2	55 40	55.2		
25 56	40.5	55 51	45.4	25 46	50.3	56 17	55.3		
26 33	40.6	56 28	45.5	26 22	50.4	56 53	55.4		
27 10	40.7	57 4	45.6	26 59	50.5	57 30	55.5		
27 46	40.8	57 41	45.7	27 36	50.6	58 7	55.6		
28 23	40.9	58 18	45.8	28 12	50.7	58 43	55.7		
		58 54	45.9	28 49	50.8	59 20	55.8		
29 0	3 41.0			29 25	50.9	59 57	55.9		
29 36	41.1	59 31	3 46.0						

14 Tafeln zur Verwandlung der mittleren Zeit u. Sternzeit. I.

3'40" | 0''6
4 16 | 0.7

24 ^h				25 ^h			
St. Zeit	Reduct.	St. Zeit	Reduct.	St. Zeit	Reduct.	St. Zeit	Reduct.
0' 33"	3' 56''0	30' 28"	4' 0''9	0' 22"	4' 5''8	30' 17"	4' 10''7
1 10	56.1			0 59	5.9	30 54	10.8
1 46	56.2	31 4	4 1.0			31 30	10.9
2 23	56.3	31 41	1.1	1 36	4 6.0		
3 0	56.4	32 18	1.2	2 12	6.1	32 7	4 11.0
3 36	56.5	32 54	1.3	2 49	6.2	32 44	11.1
4 13	56.6	33 31	1.4	3 26	6.3	33 20	11.2
4 50	56.7	34 8	1.5	4 2	6.4	33 57	11.3
5 26	56.8	34 44	1.6	4 39	6.5	34 33	11.4
6 3	56.9	35 21	1.7	5 15	6.6	35 10	11.5
		35 57	1.8	5 52	6.7	35 47	11.6
		36 34	1.9	6 29	6.8	36 23	11.7
6 39	3 57.0			7 5	6.9	37 0	11.8
7 16	57.1					37 37	11.9
7 53	57.2	37 11	4 2.0				
8 29	57.3	37 47	2.1	7 42	4 7.0		
9 6	57.4	38 24	2.2	8 19	7.1	38 13	4 12.0
9 43	57.5	39 1	2.3	8 55	7.2	38 50	12.1
10 19	57.6	39 37	2.4	9 32	7.3	39 26	12.2
10 56	57.7	40 14	2.5	10 8	7.4	40 3	12.3
11 32	57.8	40 50	2.6	10 45	7.5	40 40	12.4
12 9	57.9	41 27	2.7	11 22	7.6	41 16	12.5
		42 4	2.8	11 58	7.7	41 53	12.6
		42 40	2.9	12 35	7.8	42 30	12.7
12 46	3 58.0			13 12	7.9	43 6	12.8
13 22	58.1	43 17	4 3.0			43 43	12.9
13 59	58.2	43 54	3.1	13 48	4 8.0		
14 36	58.3	44 30	3.2	14 25	8.1	44 19	4 13.0
15 12	58.4	45 7	3.3	15 1	8.2	44 56	13.1
15 49	58.5	45 43	3.4	15 38	8.3	45 33	13.2
16 25	58.6	46 20	3.5	16 15	8.4	46 9	13.3
17 2	58.7	46 57	3.6	16 51	8.5	46 46	13.4
17 39	58.8	47 33	3.7	17 28	8.6	47 23	13.5
18 15	58.9	48 10	3.8	18 5	8.7	47 59	13.6
		48 46	3.9	18 41	8.8	48 36	13.7
18 52	3 59.0			19 18	8.9	49 12	13.8
19 29	59.1	49 23	4 4.0			49 49	13.9
20 5	59.2	50 0	4.1	19 54	4 9.0		
20 42	59.3	50 36	4.2	20 31	9.1	50 26	4 14.0
21 18	59.4	51 13	4.3	21 8	9.2	51 2	14.1
21 55	59.5	51 50	4.4	21 44	9.3	51 39	14.2
22 32	59.6	52 26	4.5	22 21	9.4	52 16	14.3
23 8	59.7	53 3	4.6	22 58	9.5	52 52	14.4
23 45	59.8	53 40	4.7	23 34	9.6	53 29	14.5
24 22	59.9	54 16	4.8	24 11	9.7	54 5	14.6
		54 53	4.9	24 47	9.8	54 42	14.7
24 58	4 0.0			25 24	9.9	55 19	14.8
25 35	0.1	55 29	4 5.0			55 55	14.9
26 11	0.2	56 6	5.1	26 1	4 10.0		
26 48	0.3	56 43	5.2	26 37	10.1	56 32	4 15.0
27 25	0.4	57 19	5.3	27 14	10.2	57 8	15.1
28 1	0.5	57 56	5.4	27 51	10.3	57 45	15.2
28 38	0.6	58 33	5.5	28 27	10.4	58 21	15.3
29 15	0.7	59 9	5.6	29 4	10.5	58 58	15.4
29 51	0.8	59 46	5.7	29 40	10.6	59 35	15.5

	Stunden		Minuten		Secunden		Bruchtheile der Secunden	
	Mittlere Zeit	Sternzeit	Mittl. Zeit	Sternzeit	Mittl. Zeit	Sternzeit		
0	0' 0' 0000	0' 0' 0000	0' 0' 0000	0' 0' 0000	0' 0' 0000	0' 0' 0000	0' 0	0' 0000
1	0 9.8565	0 9.8296	0.1643	0.1638	0.0027	0.0027	0.1	0.0003
2	0 19.7130	0 19.6591	0.3286	0.3277	0.0055	0.0055	0.2	0.0006
3	0 29.5694	0 29.4887	0.4928	0.4915	0.0082	0.0082	0.3	0.0008
4	0 39.4259	0 39.3182	0.6571	0.6553	0.0110	0.0109	0.4	0.0011
5	0 49.2824	0 49.1478	0.8214	0.8191	0.0137	0.0136	0.5	0.0014
6	0 59.1388	0 58.9774	0.9857	0.9830	0.0164	0.0164	0.6	0.0016
7	1 8.9953	1 8.8069	1.1499	1.1468	0.0192	0.0191	0.7	0.0019
8	1 18.8518	1 18.6365	1.3142	1.3106	0.0219	0.0218	0.8	0.0022
9	1 28.7083	1 28.4660	1.4785	1.4744	0.0246	0.0246	0.9	0.0025
10	1 38.5647	1 38.2956	1.6428	1.6383	0.0274	0.0273	1.0	0.0027
11	1 48.4212	1 48.1252	1.8070	1.8021	0.0301	0.0300		
12	1 58.2777	1 57.9547	1.9713	1.9659	0.0329	0.0328		
13	2 8.1342	2 7.7843	2.1356	2.1297	0.0356	0.0355		
14	2 17.9906	2 17.6138	2.2998	2.2936	0.0383	0.0382		
15	2 27.8471	2 27.4434	2.4641	2.4574	0.0411	0.0409		
16	2 37.7036	2 37.2730	2.6284	2.6212	0.0438	0.0437		
17	2 47.5600	2 47.1025	2.7927	2.7850	0.0465	0.0464		
18	2 57.4165	2 56.9321	2.9569	2.9489	0.0493	0.0491		
19	3 7.2730	3 6.7616	3.1212	3.1127	0.0520	0.0519		
20	3 17.1295	3 16.5912	3.2855	3.2765	0.0548	0.0546		
21	3 26.9859	3 26.4208	3.4498	3.4403	0.0575	0.0573		
22	3 36.8424	3 36.2503	3.6140	3.6042	0.0602	0.0601		
23	3 46.6989	3 46.0799	3.7783	3.7680	0.0630	0.0628		
24	3 56.5554	3 55.9094	3.9426	3.9318	0.0657	0.0655		
25			4.1069	4.0956	0.0685	0.0682		
26			4.2711	4.2595	0.0712	0.0710		
27			4.4354	4.4233	0.0739	0.0737		
28			4.5997	4.5871	0.0767	0.0764		
29			4.7640	4.7510	0.0794	0.0792		
30			4.9282	4.9148	0.0821	0.0819		
31			5.0925	5.0786	0.0849	0.0846		
32			5.2568	5.2424	0.0876	0.0874		
33			5.4211	5.4063	0.0904	0.0901		
34			5.5853	5.5701	0.0931	0.0928		
35			5.7496	5.7339	0.0958	0.0955		
36			5.9139	5.8977	0.0986	0.0983		
37			6.0782	6.0616	0.1013	0.1010		
38			6.2424	6.2254	0.1040	0.1037		
39			6.4067	6.3892	0.1068	0.1065		
40			6.5710	6.5530	0.1095	0.1092		
41			6.7353	6.7169	0.1123	0.1119		
42			6.8995	6.8807	0.1150	0.1147		
43			7.0638	7.0445	0.1177	0.1174		
44			7.2281	7.2083	0.1205	0.1201		
45			7.3924	7.3722	0.1232	0.1228		
46			7.5566	7.5360	0.1259	0.1256		
47			7.7209	7.6998	0.1287	0.1283		
48			7.8852	7.8636	0.1314	0.1310		
49			8.0495	8.0275	0.1342	0.1338		
50			8.2137	8.1913	0.1369	0.1365		
51			8.3780	8.3551	0.1396	0.1392		
52			8.5423	8.5190	0.1424	0.1420		
53			8.7066	8.6828	0.1451	0.1447		
54			8.8708	8.8466	0.1479	0.1474		
55			9.0351	9.0104	0.1506	0.1501		
56			9.1994	9.1743	0.1533	0.1529		
57			9.3637	9.3381	0.1561	0.1556		
58			9.5279	9.5019	0.1588	0.1583		
59			9.6922	9.6657	0.1615	0.1611		
60			9.8565	9.8296	0.1643	0.1638		

Hunderttheile des Tages.

0 ^t 01	0 ^h 14' 24"	0 ^t 34	8 ^h 9' 36"	0 ^t 67	16 ^h 4' 48"
0.02	0 28 48	0.35	8 24 0	0.68	16 19 12
0.03	0 43 12			0.69	16 33 36
0.04	0 57 36	0.36	8 38 24	0.70	16 48 0
0.05	1 12 0	0.37	8 52 48		
		0.38	9 7 12	0.71	17 2 24
0.06	1 26 24	0.39	9 21 36	0.72	17 16 48
0.07	1 40 48	0.40	9 36 0	0.73	17 31 12
0.08	1 55 12			0.74	17 45 36
0.09	2 9 36	0.41	9 50 24	0.75	18 0 0
0.10	2 24 0	0.42	10 4 48		
		0.43	10 19 12	0.76	18 14 24
0.11	2 38 24	0.44	10 33 36	0.77	18 28 48
0.12	2 52 48	0.45	10 48 0	0.78	18 43 12
0.13	3 7 12			0.79	18 57 36
0.14	3 21 36	0.46	11 2 24	0.80	19 12 0
0.15	3 36 0	0.47	11 16 48		
		0.48	11 31 12	0.81	19 26 24
0.16	3 50 24	0.49	11 45 36	0.82	19 40 48
0.17	4 4 48	0.50	12 0 0	0.83	19 55 12
0.18	4 19 12			0.84	20 9 36
0.19	4 33 36	0.51	12 14 24	0.85	20 24 0
0.20	4 48 0	0.52	12 28 28		
		0.53	12 43 12	0.86	20 38 24
0.21	5 2 24	0.54	12 57 36	0.87	20 52 48
0.22	5 16 48	0.55	13 12 0	0.88	21 7 12
0.23	5 31 12			0.89	21 21 36
0.24	5 45 36	0.56	13 26 24	0.90	21 36 0
0.25	6 0 0	0.57	13 40 48		
		0.58	13 55 12	0.91	21 50 24
0.26	6 14 24	0.59	14 9 36	0.92	22 4 48
0.27	6 28 48	0.60	14 24 0	0.93	22 19 12
0.28	6 43 12			0.94	22 33 36
0.29	6 57 36	0.61	14 38 24	0.95	22 48 0
0.30	7 12 0	0.62	14 52 48		
		0.63	15 7 12	0.96	23 2 24
0.31	7 26 24	0.64	15 21 36	0.97	23 16 48
0.32	7 40 48	0.65	15 36 0	0.98	23 31 12
0.33	7 55 12			0.99	23 45 36
		0.66	15 50 24		

Zehntausendtheile des Tages.

Hundert-
tausend-
theile.

ot oo		ot oo		ot oo	
01	0' 8''64	34	4' 53''76	67	9' 38''88
02	0 17.28	35	5 2.40	68	9 47.52
03	0 25.92			69	9 56.16
04	0 34.56	36	5 11.04	70	10 4.80
05	0 43.20	37	5 19.68		
		38	5 28.32	71	10 13.44
06	0 51.84	39	5 36.96	72	10 22.08
07	1 0.48	40	5 45.60	73	10 30.72
08	1 9.12			74	10 39.36
09	1 17.76	41	5 54.24	75	10 48.00
10	1 26.40	42	6 2.88		
		43	6 11.52	76	10 56.64
11	1 35.04	44	6 20.16	77	11 5.28
12	1 43.68	45	6 28.80	78	11 13.92
13	1 52.32			79	11 22.56
14	2 0.96	46	6 37.44	80	11 31.20
15	2 9.60	47	6 46.08		
		48	6 54.72	81	11 39.84
16	2 18.24	49	7 3.36	82	11 48.48
17	2 26.88	50	7 12.00	83	11 57.12
18	2 35.52			84	12 5.76
19	2 44.16	51	7 20.64	85	12 14.40
20	2 52.80	52	7 29.28		
		53	7 37.92	86	12 23.04
21	3 1.44	54	7 46.56	87	12 31.68
22	3 10.08	55	7 55.20	88	12 40.32
23	3 18.72			89	12 48.96
24	3 27.36	56	8 3.84	90	12 57.60
25	3 36.00	57	8 12.48		
		58	8 21.12	91	13 6.24
26	3 44.64	59	8 29.76	92	13 14.88
27	3 53.28	60	8 38.40	93	13 23.52
28	4 1.92			94	13 32.16
29	4 10.56	61	8 47.04	95	13 40.80
30	4 19.20	62	8 55.68		
		63	9 4.32	96	13 49.44
31	4 27.84	64	9 12.96	97	13 58.08
32	4 36.48	65	9 21.60	98	14 6.72
33	4 45.12			99	14 15.36
		66	9 30.24		

Milliontheile.

ot 00000	
0	0''0000
1	0.0864
2	0.1728
3	0.2592
4	0.3456
5	0.4320
6	0.5184
7	0.6048
8	0.6912
9	0.7776

Grade.				Minuten.				Secunden.			
10	0 ^h 4'	70 ^o	4 ^h 40'	1'	0' 4''	31'	2' 4''	1''	0'' 07	31''	2'' 07
2	0 8	80	5 20	2	0 8	32	2 8	2	0.13	32	2.13
3	0 12	90	6 0	3	0 12	33	2 12	3	0.20	33	2.20
4	0 16	100	6 40	4	0 16	34	2 16	4	0.27	34	2.27
5	0 20	110	7 20	5	0 20	35	2 20	5	0.33	35	2.33
6	0 24	120	8 0	6	0 24	36	2 24	6	0.40	36	2.40
7	0 28	130	8 40	7	0 28	37	2 28	7	0.47	37	2.47
8	0 32	140	9 20	8	0 32	38	2 32	8	0.53	38	2.53
9	0 36	150	10 0	9	0 36	39	2 36	9	0.60	39	2.60
10	0 40	160	10 40	10	0 40	40	2 40	10	0.67	40	2.67
11	0 44	170	11 20	11	0 44	41	2 44	11	0.73	41	2.73
12	0 48	180	12 0	12	0 48	42	2 48	12	0.80	42	2.80
13	0 52	190	12 40	13	0 52	43	2 52	13	0.87	43	2.87
14	0 56	200	13 20	14	0 56	44	2 56	14	0.93	44	2.93
15	1 0	210	14 0	15	1 0	45	3 0	15	1.00	45	3.00
16	1 4	220	14 40	16	1 4	46	3 4	16	1.07	46	3.07
17	1 8	230	15 20	17	1 8	47	3 8	17	1.13	47	3.13
18	1 12	240	16 0	18	1 12	48	3 12	18	1.20	48	3.20
19	1 16	250	16 40	19	1 16	49	3 16	19	1.27	49	3.27
20	1 20	260	17 20	20	1 20	50	3 20	20	1.33	50	3.33
21	1 24	270	18 0	21	1 24	51	3 24	21	1.40	51	3.40
22	1 28	280	18 40	22	1 28	52	3 28	22	1.47	52	3.47
23	1 32	290	19 20	23	1 32	53	3 32	23	1.53	53	3.53
24	1 36	300	20 0	24	1 36	54	3 36	24	1.60	54	3.60
26	1 44	310	20 40	25	1 40	55	3 40	25	1.67	55	3.67
28	1 52	320	21 20	26	1 44	56	3 44	26	1.73	56	3.73
30	2 0	330	22 0	27	1 48	57	3 48	27	1.80	57	3.80
40	2 40	340	22 40	28	1 52	58	3 52	28	1.87	58	3.87
50	3 20	350	23 20	29	1 56	59	3 56	29	1.93	59	3.93
60	4 0	360	24 0	30	2 0	60	4 0	30	2.00	60	4.00

Stunden.		Minuten.				Secunden.					
h		1'	0' 15"	31'	7' 45"	1''	0' 15"	31''	7' 45"	0' 01"	0' 15"
2	30	2	0 30	32	8 0	2	0 30	32	8 0	0.02	0.30
3	45	3	0 45	33	8 15	3	0 45	33	8 15	0.03	0.45
4	60	4	1 0	34	8 30	4	1 0	34	8 30	0.04	0.60
5	75	5	1 15	35	8 45	5	1 15	35	8 45	0.05	0.75
6	90	6	1 30	36	9 0	6	1 30	36	9 0	0.06	0.90
7	105	7	1 45	37	9 15	7	1 45	37	9 15	0.07	1.05
8	120	8	2 0	38	9 30	8	2 0	38	9 30	0.08	1.20
9	135	9	2 15	39	9 45	9	2 15	39	9 45	0.09	1.35
10	150	10	2 30	40	10 0	10	2 30	40	10 0	0.10	1.50
11	165	11	2 45	41	10 15	11	2 45	41	10 15	0.11	1.65
12	180	12	3 0	42	10 30	12	3 0	42	10 30	0.12	1.80
13	195	13	3 15	43	10 45	13	3 15	43	10 45	0.13	1.95
14	210	14	3 30	44	11 0	14	3 30	44	11 0	0.14	2.10
15	225	15	3 45	45	11 15	15	3 45	45	11 15	0.15	2.25
16	240	16	4 0	46	11 30	16	4 0	46	11 30	0.16	2.40
17	255	17	4 15	47	11 45	17	4 15	47	11 45	0.17	2.55
18	270	18	4 30	48	12 0	18	4 30	48	12 0	0.18	2.70
19	285	19	4 45	49	12 15	19	4 45	49	12 15	0.19	2.85
20	300	20	5 0	50	12 30	20	5 0	50	12 30	0.20	3.00
21	315	21	5 15	51	12 45	21	5 15	51	12 45	0. 1	1. 5
22	330	22	5 30	52	13 0	22	5 30	52	13 0	0. 2	3. 0
23	345	23	5 45	53	13 15	23	5 45	53	13 15	0. 3	4. 5
24	360	24	6 0	54	13 30	24	6 0	54	13 30	0. 4	6. 0
25	375	25	6 15	55	13 45	25	6 15	55	13 45	0. 5	7. 5
26	390	26	6 30	56	14 0	26	6 30	56	14 0	0. 6	9. 0
27	405	27	6 45	57	14 15	27	6 45	57	14 15	0. 7	10. 5
28	420	28	7 0	58	14 30	28	7 0	58	14 30	0. 8	12. 0
29	435	29	7 15	59	14 45	29	7 15	59	14 45	0. 9	13. 5
30	450	30	7 30	60	15 0	30	7 30	60	15 0	1. 0	15. 0

Grade.

1	0.0174533	31 ⁰	0.5410521	61 ⁰	1.0646508	95 ⁰	1.6580628
2	0.0349066	32	0.5585054	62	1.0821041	100	1.7453293
3	0.0523599	33	0.5759587	63	1.0995574	105	1.8325957
4	0.0698132	34	0.5934119	64	1.1170107	110	1.9198622
5	0.0872665	35	0.6108652	65	1.1344640	115	2.0071286
6	0.1047198	36	0.6283185	66	1.1519173	120	2.0943951
7	0.1221730	37	0.6457718	67	1.1693706	130	2.2689280
8	0.1396263	38	0.6632251	68	1.1868239	140	2.4434610
9	0.1570796	39	0.6806784	69	1.2042772	150	2.6179939
10	0.1745329	40	0.6981317	70	1.2217305	160	2.7925268
11	0.1919862	41	0.7155850	71	1.2391838	170	2.9670597
12	0.2094395	42	0.7330383	72	1.2566371	180	3.1415927
13	0.2268928	43	0.7504916	73	1.2740904	190	3.3161256
14	0.2443461	44	0.7679449	74	1.2915436	200	3.4906585
15	0.2617994	45	0.7853982	75	1.3089969	210	3.6651914
16	0.2792527	46	0.8028515	76	1.3264502	220	3.8397243
17	0.2967060	47	0.8203047	77	1.3439035	230	4.0142573
18	0.3141593	48	0.8377580	78	1.3613568	240	4.1887902
19	0.3316126	49	0.8552113	79	1.3788101	250	4.3633231
20	0.3490659	50	0.8726646	80	1.3962634	260	4.5378561
21	0.3665191	51	0.8901179	81	1.4137167	270	4.7123890
22	0.3839724	52	0.9075712	82	1.4311700	280	4.8869219
23	0.4014257	53	0.9250245	83	1.4486233	290	5.0614548
24	0.4188790	54	0.9424778	84	1.4660766	300	5.2359878
25	0.4363323	55	0.9599311	85	1.4835299	310	5.4105207
26	0.4537856	56	0.9773844	86	1.5009832	320	5.5850536
27	0.4712389	57	0.9948377	87	1.5184364	330	5.7595865
28	0.4886922	58	1.0122910	88	1.5358897	340	5.9341195
29	0.5061455	59	1.0297443	89	1.5533430	350	6.1086524
30	0.5235988	60	1.0471976	90	1.5707963	360	6.2831853

Minuten.

Secunden.

1'	0.0002909	31'	0.0090175	1''	0.0000048	31''	0.0001503
2	0.0005818	32	0.0093084	2	0.0000097	32	0.0001551
3	0.0008727	33	0.0095993	3	0.0000145	33	0.0001600
4	0.0011636	34	0.0098902	4	0.0000194	34	0.0001648
5	0.0014544	35	0.0101811	5	0.0000242	35	0.0001697
6	0.0017453	36	0.0104720	6	0.0000291	36	0.0001745
7	0.0020362	37	0.0107629	7	0.0000339	37	0.0001794
8	0.0023271	38	0.0110538	8	0.0000388	38	0.0001842
9	0.0026180	39	0.0113446	9	0.0000436	39	0.0001891
10	0.0029089	40	0.0116355	10	0.0000485	40	0.0001939
11	0.0031998	41	0.0119264	11	0.0000533	41	0.0001988
12	0.0034907	42	0.0122173	12	0.0000582	42	0.0002036
13	0.0037815	43	0.0125082	13	0.0000630	43	0.0002085
14	0.0040724	44	0.0127991	14	0.0000679	44	0.0002133
15	0.0043633	45	0.0130900	15	0.0000727	45	0.0002182
16	0.0046542	46	0.0133809	16	0.0000776	46	0.0002230
17	0.0049451	47	0.0136717	17	0.0000824	47	0.0002279
18	0.0052360	48	0.0139626	18	0.0000873	48	0.0002327
19	0.0055269	49	0.0142535	19	0.0000921	49	0.0002376
20	0.0058178	50	0.0145444	20	0.0000970	50	0.0002424
21	0.0061087	51	0.0148353	21	0.0001018	51	0.0002473
22	0.0063995	52	0.0151262	22	0.0001067	52	0.0002521
23	0.0066904	53	0.0154171	23	0.0001115	53	0.0002570
24	0.0069813	54	0.0157080	24	0.0001164	54	0.0002618
25	0.0072722	55	0.0159989	25	0.0001212	55	0.0002666
26	0.0075631	56	0.0162897	26	0.0001261	56	0.0002715
27	0.0078540	57	0.0165806	27	0.0001309	57	0.0002763
28	0.0081449	58	0.0168715	28	0.0001357	58	0.0002812
29	0.0084358	59	0.0171624	29	0.0001406	59	0.0002860
30	0.0087266	60	0.0174533	30	0.0001454	60	0.0002909

Scheinb. Zenith- distanz.	Refraction.	Scheinb. Zenith- distanz.	Refraction.	Scheinb. Zenith- distanz.	Refraction.
0°	0''0	48° 0'	1' 4''0	62° 0'	1' 48''2
4	4.1	20	1 4.7	20	1 49.7
8	8.1	40	1 5.5	40	1 51.2
9	9.1	49 0	1 6.3	63 0	1 52.8
10	10.2	20	1 7.1	20	1 54.4
	1.0	40	1 7.9	40	1 56.1
11	11.2	50 0	1 8.7	64 0	1 57.8
12	12.3	20	1 9.5	20	1 59.6
13	13.4	40	1 10.3	40	2 1.4
14	14.5	51 0	1 11.2	65 0	2 3.2
15	15.5	20	1 12.0	20	2 5.1
	1.1	40	1 12.9	40	2 7.0
16	16.6	52 0	1 13.8	66 0	2 8.9
17	17.7	20	1 14.7	20	2 10.9
18	18.8	40	1 15.6	40	2 13.0
19	19.9	53 0	1 16.5	67 0	2 15.2
20	21.0	20	1 17.4	20	2 17.4
	1.2	40	1 18.3	40	2 19.6
21	22.2	54 0	1 19.3	68 0	2 21.9
22	23.3	20	1 20.3	20	2 24.3
23	24.5	40	1 21.3	40	2 26.8
24	25.7	55 0	1 22.3	69 0	2 29.3
25	26.9	20	1 23.3	20	2 31.9
	1.3	40	1 24.3	40	2 34.5
26	28.2	56 0	1 25.4	70 0	2 37.3
27	29.4	20	1 26.5	20	2 40.2
28	30.7	40	1 27.6	40	2 43.1
29	32.0	57 0	1 28.7	71 0	2 46.1
30	33.3	20	1 29.8	20	2 49.3
	1.4	40	1 30.9	40	2 52.5
31	34.7	58 0	1 32.1	72 0	2 55.8
32	36.1	20	1 33.3	20	2 59.3
33	37.5	40	1 34.5	40	3 2.9
34	38.9	59 0	1 35.8	73 0	3 6.6
35	40.4	20	1 37.1	20	3 10.5
	1.5	40	1 38.4	40	3 14.5
36	41.9	60 0	1 39.7	74 0	3 18.6
37	43.5	20	1 41.0	20	3 22.9
38	45.1	40	1 42.4	40	3 27.4
39	46.7	61 0	1 43.8	75 0	3 32.1
40	48.4	20	1 45.3	20	3 37.0
	1.7	40	1 46.7	40	3 42.1
41	50.2	62 0	1 48.2	76 0	3 47.4
42	51.9				
43	53.8				
44	55.7				
45	57.7				
46	59.7				
47	61.8				
48	64.0				

Scheinb. Zenith- distanz.	Refraction.	Scheinb. Zenith- distanz.	Refraction.
76° 0'	3' 47'' 4 2'' 8	83° 0'	7' 19'' 7 9'' 5
10	3 50.2 2.8	10	7 29.2 10.0
20	3 53.0 2.9	20	7 39.2 10.3
30	3 55.9 2.9	30	7 49.5 10.8
40	3 58.8 3.0	40	8 0.3 11.3
50	4 1.8 3.1	50	8 11.6 11.7
77 0	4 4.9 3.2	84 0	8 23.3 12.3
10	4 8.1 3.2	10	8 35.6 12.8
20	4 11.3 3.3	20	8 48.4 13.5
30	4 14.6 3.4	30	9 1.9 14.1
40	4 18.0 3.4	40	9 16.0 14.9
50	4 21.4 3.6	50	9 30.9 15.6
78 0	4 25.0 3.7	85 0	9 46.5 16.8
10	4 28.7 3.7	10	10 3.3 17.9
22	4 32.4 3.9	20	10 21.2 18.4
30	4 36.3 3.9	30	10 39.6 19.0
40	4 40.2 4.1	40	10 58.6 19.7
50	4 44.3 4.2	50	11 18.3 20.6
79 0	4 48.5 4.3	86 0	11 38.9 21.8
10	4 52.8 4.4	10	12 0.7 23.0
20	4 57.2 4.5	20	12 23.7 24.6
30	5 1.7 4.7	30	12 48.3 26.7
40	5 6.4 4.8	40	13 15.0 28.7
50	5 11.2 5.0	50	13 43.7 30.9
80 0	5 16.2 5.1	87 0	14 14.6 33.2
10	5 21.3 5.2	10	14 47.8 35.6
20	5 26.5 5.5	20	15 23.4 37.5
30	5 32.0 5.6	30	16 0.9 39.8
40	5 37.6 5.7	40	16 40.7 42.3
50	5 43.3 6.0	50	17 23.0 45.6
81 0	5 49.3 6.1	88 0	18 8.6 49.4
10	5 55.4 6.2	10	18 58.0 53.9
20	6 1.8 6.6	20	19 51.9 59.0
30	6 8.4 6.8	30	20 50.9 64.7
40	6 15.2 7.1	40	21 55.6 71.1
50	6 22.3 7.3	50	23 6.7 77.9
82 0	6 29.6 7.6	89 0	24 24.6 85.2
10	6 37.2 7.9	10	25 49.8 92.9
20	6 45.1 8.2	20	27 22.7 100.8
30	6 53.3 8.4	30	29 3.5 108.8
40	7 1.7 8.8	40	30 52.3 116.9
50	7 10.5 9.2	50	32 49.2 124.9
83 0	7 19.7	90 0	34 54.1

	0°		1°		2°		3°		4°		
0	—		0.0035	72	0.3046	36	0.4810	24	0.6062	18	0
1	8.23	30	0.0107	70	0.3082	36	0.4834	24	0.6080	18	1
2	8.53	17	0.0177	70	0.3118	36	0.4858	24	0.6098	18	2
3	8.70	13	0.0247	68	0.3154	35	0.4882	24	0.6116	18	3
4	8.83		0.0315	67	0.3189	35	0.4906	23	0.6134	18	4
5	8.92	9	0.0382	67	0.3224	35	0.4929	23	0.6152	18	5
6	9.003	67	0.0449	65	0.3258	34	0.4952	23	0.6170	17	6
7	9.070	58	0.0514	64	0.3293	35	0.4976	23	0.6187	17	7
8	9.128	52	0.0578	64	0.3327	34	0.4999	23	0.6205	17	8
9	9.180	45	0.0642	62	0.3361	34	0.5022	23	0.6222	17	9
10	9.225	42	0.0704	62	0.3395	34	0.5045	23	0.6240	17	10
11	9.267	37	0.0766	61	0.3428	33	0.5068	22	0.6257	18	11
12	9.304	35	0.0827	60	0.3461	33	0.5090	23	0.6275	17	12
13	9.339	32	0.0887	59	0.3494	32	0.5113	23	0.6292	17	13
14	9.371	30	0.0946	58	0.3526	32	0.5136	22	0.6309	17	14
15	9.401	28	0.1004	58	0.3558	32	0.5158	22	0.6326	17	15
16	9.429	27	0.1062	56	0.3590	32	0.5180	22	0.6343	17	16
17	9.456	25	0.1118	57	0.3622	32	0.5202	22	0.6360	17	17
18	9.481	23	0.1175	55	0.3654	31	0.5224	22	0.6377	17	18
19	9.504	22	0.1230	54	0.3685	31	0.5246	22	0.6394	17	19
20	9.526	22	0.1284	54	0.3716	31	0.5268	22	0.6411	17	20
21	9.548	20	0.1338	54	0.3747	31	0.5290	22	0.6428	16	21
22	9.568	19	0.1392	52	0.3778	31	0.5312	21	0.6444	17	22
23	9.587	18	0.1444	52	0.3809	30	0.5333	21	0.6461	16	23
24	9.605	18	0.1496	52	0.3839	30	0.5354	22	0.6477	17	24
25	9.623	17	0.1548	51	0.3869	30	0.5376	21	0.6494	16	25
26	9.640	17	0.1599	50	0.3899	30	0.5397	21	0.6510	17	26
27	9.657	16	0.1649	50	0.3929	29	0.5418	21	0.6527	16	27
28	9.673	15	0.1699	49	0.3958	29	0.5439	21	0.6543	16	28
29	9.688	14	0.1748	48	0.3987	29	0.5460	20	0.6559	16	29
30	9.702	15	0.1796	48	0.4016	29	0.5480	21	0.6575	16	30
31	9.717	13	0.1844	48	0.4045	29	0.5501	21	0.6591	16	31
32	9.730	14	0.1892	47	0.4074	29	0.5522	20	0.6607	16	32
33	9.744	13	0.1939	46	0.4103	28	0.5542	21	0.6623	16	33
34	9.757	12	0.1985	46	0.4131	28	0.5563	20	0.6639	16	34
35	9.769	13	0.2031	46	0.4159	28	0.5583	20	0.6655	16	35
36	9.782	11	0.2077	45	0.4187	28	0.5603	20	0.6671	16	36
37	9.793	12	0.2122	44	0.4215	28	0.5623	20	0.6687	15	37
38	9.805	11	0.2166	44	0.4243	27	0.5643	20	0.6702	16	38
39	9.816	11	0.2210	44	0.4270	27	0.5663	20	0.6718	16	39
40	9.827	11	0.2254	43	0.4297	27	0.5683	19	0.6734	15	40
41	9.838	11	0.2297	43	0.4324	27	0.5702	20	0.6750	16	41
42	9.849	10	0.2340	42	0.4351	27	0.5722	20	0.6765	16	42
43	9.859	10	0.2382	42	0.4378	27	0.5742	19	0.6781	15	43
44	9.869	10	0.2424	42	0.4405	26	0.5761	20	0.6796	15	44
45	9.879	9	0.2466	41	0.4431	26	0.5781	20	0.6811	16	45
46	9.888	9	0.2507	41	0.4457	26	0.5801	19	0.6827	15	46
47	9.897	10	0.2548	40	0.4483	26	0.5820	19	0.6842	15	47
48	9.907	8	0.2588	40	0.4509	26	0.5839	19	0.6857	15	48
49	9.915	9	0.2628	40	0.4535	26	0.5858	19	0.6872	15	49
50	9.924	9	0.2668	40	0.4561	25	0.5877	19	0.6887	15	50
51	9.933	8	0.2708	39	0.4586	26	0.5896	18	0.6902	15	51
52	9.941	9	0.2747	39	0.4612	25	0.5914	19	0.6917	15	52
53	9.950	8	0.2786	38	0.4637	25	0.5933	19	0.6932	15	53
54	9.958	8	0.2824	38	0.4662	25	0.5952	18	0.6947	15	54
55	9.966	7	0.2862	37	0.4687	25	0.5970	19	0.6962	14	55
56	9.973	8	0.2899	37	0.4712	24	0.5989	18	0.6976	15	56
57	9.981	8	0.2936	37	0.4736	25	0.6007	19	0.6991	14	57
58	9.989	7	0.2973	37	0.4761	25	0.6026	18	0.7005	15	58
59	9.996	7	0.3010	36	0.4786	24	0.6044	18	0.7020	15	59
60	0.003		0.3046		0.4810		0.6062		0.7035		60

	5°	6°	7°	8°	9°	
0	0.7035	0.7832	0.8507	0.9093	0.9613	0
1	0.7049 ¹⁴	0.7844 ¹²	0.8517 ¹⁰	0.9103 ¹⁰	0.9621 ⁸	1
2	0.7064 ¹⁵	0.7856 ¹²	0.8528 ¹¹	0.9112 ⁹	0.9629 ⁸	2
3	0.7078 ¹⁴	0.7868 ¹²	0.8538 ¹⁰	0.9121 ⁹	0.9638 ⁸	3
4	0.7092 ¹⁴	0.7880 ¹²	0.8549 ¹¹	0.9130 ⁹	0.9646 ⁸	4
5	0.7107 ¹⁵	0.7892 ¹²	0.8559 ¹⁰	0.9139 ⁹	0.9654 ⁸	5
6	0.7121 ¹⁴	0.7904 ¹²	0.8569 ¹⁰	0.9148 ⁹	0.9662 ⁸	6
7	0.7135 ¹⁴	0.7916 ¹²	0.8580 ¹¹	0.9157 ⁹	0.9670 ⁸	7
8	0.7150 ¹⁵	0.7928 ¹²	0.8590 ¹⁰	0.9166 ⁹	0.9678 ⁸	8
9	0.7164 ¹⁴	0.7940 ¹²	0.8600 ¹⁰	0.9175 ⁹	0.9686 ⁸	9
10	0.7178 ¹⁴	0.7952 ¹²	0.8610 ¹⁰	0.9184 ⁹	0.9694 ⁸	10
11	0.7192 ¹⁴	0.7963 ¹¹	0.8620 ¹⁰	0.9193 ⁹	0.9702 ⁸	11
12	0.7206 ¹⁴	0.7975 ¹²	0.8631 ¹¹	0.9202 ⁹	0.9710 ⁸	12
13	0.7220 ¹⁴	0.7987 ¹²	0.8641 ¹⁰	0.9211 ⁹	0.9718 ⁸	13
14	0.7234 ¹⁴	0.7999 ¹²	0.8651 ¹⁰	0.9220 ⁹	0.9726 ⁸	14
15	0.7248 ¹⁴	0.8010 ¹¹	0.8661 ¹⁰	0.9229 ⁹	0.9733 ⁷	15
16	0.7261 ¹³	0.8022 ¹²	0.8671 ¹⁰	0.9237 ⁹	0.9741 ⁸	16
17	0.7275 ¹⁴	0.8034 ¹²	0.8681 ¹⁰	0.9246 ⁹	0.9749 ⁸	17
18	0.7289 ¹⁴	0.8045 ¹¹	0.8691 ¹⁰	0.9255 ⁹	0.9757 ⁸	18
19	0.7303 ¹⁴	0.8057 ¹²	0.8701 ¹⁰	0.9264 ⁹	0.9765 ⁸	19
20	0.7317 ¹⁴	0.8068 ¹¹	0.8711 ¹⁰	0.9273 ⁹	0.9773 ⁸	20
21	0.7331 ¹⁴	0.8080 ¹²	0.8721 ¹⁰	0.9282 ⁹	0.9781 ⁸	21
22	0.7344 ¹³	0.8091 ¹¹	0.8731 ¹⁰	0.9290 ⁸	0.9788 ⁷	22
23	0.7358 ¹⁴	0.8103 ¹²	0.8741 ¹⁰	0.9299 ⁹	0.9796 ⁸	23
24	0.7371 ¹³	0.8114 ¹¹	0.8751 ¹⁰	0.9308 ⁹	0.9804 ⁸	24
25	0.7384 ¹³	0.8125 ¹¹	0.8760 ⁹	0.9317 ⁹	0.9812 ⁸	25
26	0.7398 ¹⁴	0.8137 ¹²	0.8770 ¹⁰	0.9325 ⁸	0.9819 ⁷	26
27	0.7411 ¹³	0.8148 ¹¹	0.8780 ¹⁰	0.9334 ⁹	0.9827 ⁸	27
28	0.7424 ¹³	0.8159 ¹¹	0.8790 ¹⁰	0.9343 ⁹	0.9835 ⁸	28
29	0.7438 ¹⁴	0.8171 ¹²	0.8800 ¹⁰	0.9352 ⁹	0.9843 ⁸	29
30	0.7451 ¹³	0.8182 ¹¹	0.8810 ¹⁰	0.9360 ⁹	0.9851 ⁸	30
31	0.7464 ¹³	0.8193 ¹¹	0.8819 ⁹	0.9369 ⁸	0.9858 ⁷	31
32	0.7477 ¹³	0.8204 ¹¹	0.8829 ¹⁰	0.9377 ⁸	0.9866 ⁸	32
33	0.7491 ¹⁴	0.8216 ¹²	0.8839 ¹⁰	0.9386 ⁸	0.9874 ⁸	33
34	0.7504 ¹³	0.8227 ¹¹	0.8849 ¹⁰	0.9394 ⁸	0.9882 ⁸	34
35	0.7517 ¹³	0.8238 ¹¹	0.8858 ⁹	0.9403 ⁹	0.9889 ⁷	35
36	0.7530 ¹³	0.8249 ¹¹	0.8868 ¹⁰	0.9412 ⁹	0.9897 ⁸	36
37	0.7543 ¹³	0.8260 ¹¹	0.8877 ⁹	0.9420 ⁸	0.9905 ⁸	37
38	0.7556 ¹³	0.8271 ¹¹	0.8887 ⁹	0.9429 ⁹	0.9912 ⁷	38
39	0.7569 ¹³	0.8282 ¹¹	0.8896 ⁹	0.9437 ⁸	0.9920 ⁸	39
40	0.7582 ¹³	0.8293 ¹¹	0.8906 ¹⁰	0.9446 ⁸	0.9928 ⁸	40
41	0.7595 ¹²	0.8304 ¹¹	0.8916 ¹⁰	0.9454 ⁸	0.9935 ⁷	41
42	0.7607 ¹²	0.8315 ¹¹	0.8925 ⁹	0.9463 ⁹	0.9943 ⁸	42
43	0.7620 ¹³	0.8325 ¹⁰	0.8935 ¹⁰	0.9471 ⁸	0.9951 ⁸	43
44	0.7633 ¹³	0.8336 ¹¹	0.8944 ⁹	0.9480 ⁸	0.9958 ⁷	44
45	0.7646 ¹³	0.8347 ¹¹	0.8954 ¹⁰	0.9488 ⁸	0.9966 ⁸	45
46	0.7658 ¹²	0.8358 ¹¹	0.8963 ⁹	0.9496 ⁸	0.9974 ⁸	46
47	0.7671 ¹³	0.8368 ¹⁰	0.8973 ¹⁰	0.9505 ⁹	0.9981 ⁷	47
48	0.7684 ¹³	0.8379 ¹¹	0.8982 ⁹	0.9513 ⁸	0.9989 ⁸	48
49	0.7697 ¹²	0.8390 ¹¹	0.8992 ¹⁰	0.9522 ⁹	0.9996 ⁷	49
50	0.7709 ¹²	0.8401 ¹¹	0.9001 ⁹	0.9530 ⁸	1.0004 ⁸	50
51	0.7722 ¹³	0.8412 ¹¹	0.9010 ⁹	0.9538 ⁸	1.0012 ⁸	51
52	0.7734 ¹²	0.8422 ¹⁰	0.9020 ¹⁰	0.9547 ⁸	1.0019 ⁷	52
53	0.7747 ¹³	0.8433 ¹¹	0.9029 ⁹	0.9555 ⁸	1.0027 ⁸	53
54	0.7759 ¹²	0.8443 ¹⁰	0.9038 ⁹	0.9563 ⁸	1.0034 ⁷	54
55	0.7771 ¹²	0.8454 ¹¹	0.9047 ¹⁰	0.9572 ⁸	1.0041 ⁸	55
56	0.7783 ¹³	0.8465 ¹⁰	0.9057 ⁹	0.9580 ⁸	1.0049 ⁷	56
57	0.7796 ¹²	0.8475 ¹¹	0.9066 ⁹	0.9588 ⁸	1.0056 ⁸	57
58	0.7808 ¹²	0.8486 ¹⁰	0.9075 ⁹	0.9596 ⁸	1.0064 ⁷	58
59	0.7820 ¹²	0.8496 ¹¹	0.9084 ⁹	0.9605 ⁸	1.0071 ⁸	59
60	0.7832	0.8507	0.9093	0.9613	1.0079	60

	10 °	11 °	12 °	13 °	14 °	
0	1.00786	1.03019	1.08901	1.12489	1.15830	0
1	1.00860 ⁷⁴	1.03086 ⁶⁷	1.08963 ⁶²	1.12547 ⁵⁸	1.15884 ⁵⁴	1
2	1.00934 ⁷⁴	1.03154 ⁶⁷	1.09025 ⁶¹	1.12604 ⁵⁷	1.15937 ⁵³	2
3	1.01008 ⁷⁴	1.03221 ⁶⁷	1.09086 ⁶¹	1.12662 ⁵⁸	1.15991 ⁵⁴	3
4	1.01082 ⁷⁴	1.03288 ⁶⁷	1.09148 ⁶²	1.12719 ⁵⁷	1.16044 ⁵³	4
5	1.01155 ⁷³	1.03355 ⁶⁷	1.09209 ⁶¹	1.12776 ⁵⁷	1.16098 ⁵⁴	5
6	1.01228 ⁷³	1.03422 ⁶⁶	1.09271 ⁶²	1.12834 ⁵⁸	1.16151 ⁵³	6
7	1.01301 ⁷³	1.03488 ⁶⁷	1.09333 ⁶¹	1.12891 ⁵⁷	1.16205 ⁵⁴	7
8	1.01374 ⁷³	1.03555 ⁶⁷	1.09394 ⁶²	1.12948 ⁵⁷	1.16258 ⁵³	8
9	1.01447 ⁷³	1.03622 ⁶⁶	1.09456 ⁶²	1.13005 ⁵⁷	1.16312 ⁵⁴	9
10	1.01519 ⁷²	1.03688 ⁶⁶	1.09518 ⁶²	1.13062 ⁵⁷	1.16365 ⁵³	10
11	1.01592 ⁷³	1.03755 ⁶⁶	1.09579 ⁶¹	1.13119 ⁵⁷	1.16418 ⁵³	11
12	1.01664 ⁷²	1.03821 ⁶⁷	1.09640 ⁶²	1.13176 ⁵⁶	1.16471 ⁵³	12
13	1.01736 ⁷³	1.03888 ⁶⁶	1.09702 ⁶¹	1.13232 ⁵⁶	1.16524 ⁵³	13
14	1.01809 ⁷³	1.03954 ⁶⁶	1.09763 ⁶¹	1.13289 ⁵⁷	1.16577 ⁵³	14
15	1.01881 ⁷²	1.04020 ⁶⁶	1.09824 ⁶⁰	1.13346 ⁵⁶	1.16630 ⁵³	15
16	1.01953 ⁷²	1.04086 ⁶⁶	1.09884 ⁶¹	1.13402 ⁵⁷	1.16683 ⁵³	16
17	1.02025 ⁷²	1.04152 ⁶⁵	1.09945 ⁶¹	1.13459 ⁵⁷	1.16736 ⁵²	17
18	1.02097 ⁷¹	1.04217 ⁶⁶	1.10006 ⁶¹	1.13515 ⁵⁶	1.16788 ⁵³	18
19	1.02168 ⁷²	1.04283 ⁶⁶	1.10067 ⁶⁰	1.13572 ⁵⁷	1.16841 ⁵³	19
20	1.02240 ⁷¹	1.04349 ⁶⁵	1.10127 ⁶⁰	1.13628 ⁵⁶	1.16894 ⁵³	20
21	1.02311 ⁷²	1.04414 ⁶⁵	1.10187 ⁶⁰	1.13684 ⁵⁶	1.16946 ⁵²	21
22	1.02383 ⁷¹	1.04479 ⁶⁶	1.10247 ⁶¹	1.13741 ⁵⁷	1.16999 ⁵³	22
23	1.02454 ⁷¹	1.04545 ⁶⁵	1.10308 ⁶⁰	1.13797 ⁵⁶	1.17052 ⁵³	23
24	1.02525 ⁷²	1.04610 ⁶⁵	1.10368 ⁶⁰	1.13853 ⁵⁶	1.17104 ⁵²	24
25	1.02597 ⁷¹	1.04675 ⁶⁵	1.10428 ⁶¹	1.13909 ⁵⁶	1.17157 ⁵³	25
26	1.02668 ⁷¹	1.04740 ⁶⁵	1.10489 ⁶⁰	1.13965 ⁵⁶	1.17209 ⁵²	26
27	1.02739 ⁷⁰	1.04805 ⁶⁵	1.10549 ⁶⁰	1.14021 ⁵⁶	1.17261 ⁵²	27
28	1.02810 ⁷¹	1.04870 ⁶⁵	1.10609 ⁶⁰	1.14077 ⁵⁶	1.17314 ⁵³	28
29	1.02880 ⁷¹	1.04935 ⁶⁵	1.10669 ⁶⁰	1.14132 ⁵⁶	1.17366 ⁵²	29
30	1.02951 ⁷⁰	1.05000 ⁶⁴	1.10729 ⁶⁰	1.14188 ⁵⁶	1.17418 ⁵²	30
31	1.03021 ⁷¹	1.05064 ⁶⁵	1.10789 ⁵⁹	1.14244 ⁵⁵	1.17470 ⁵²	31
32	1.03092 ⁷⁰	1.05129 ⁶⁴	1.10848 ⁵⁹	1.14299 ⁵⁵	1.17522 ⁵²	32
33	1.03162 ⁷⁰	1.05193 ⁶⁵	1.10908 ⁶⁰	1.14354 ⁵⁵	1.17574 ⁵²	33
34	1.03232 ⁷⁰	1.05258 ⁶⁴	1.10968 ⁶⁰	1.14410 ⁵⁶	1.17626 ⁵²	34
35	1.03302 ⁷⁰	1.05322 ⁶⁴	1.11027 ⁵⁹	1.14465 ⁵⁵	1.17678 ⁵²	35
36	1.03372 ⁶⁹	1.05386 ⁶⁴	1.11087 ⁵⁹	1.14520 ⁵⁵	1.17730 ⁵²	36
37	1.03441 ⁷⁰	1.05450 ⁶⁴	1.11146 ⁵⁹	1.14575 ⁵⁵	1.17782 ⁵¹	37
38	1.03511 ⁷⁰	1.05514 ⁶⁴	1.11205 ⁵⁹	1.14631 ⁵⁶	1.17833 ⁵¹	38
39	1.03581 ⁶⁹	1.05578 ⁶⁴	1.11264 ⁵⁹	1.14686 ⁵⁵	1.17885 ⁵²	39
40	1.03650 ⁷⁰	1.05642 ⁶³	1.11323 ⁵⁹	1.14741 ⁵⁵	1.17937 ⁵²	40
41	1.03720 ⁶⁹	1.05705 ⁶⁴	1.11382 ⁵⁸	1.14796 ⁵⁵	1.17988 ⁵¹	41
42	1.03789 ⁶⁹	1.05769 ⁶⁴	1.11440 ⁵⁹	1.14851 ⁵⁵	1.18040 ⁵²	42
43	1.03858 ⁶⁹	1.05833 ⁶³	1.11499 ⁵⁸	1.14906 ⁵⁵	1.18091 ⁵¹	43
44	1.03927 ⁶⁹	1.05896 ⁶⁴	1.11557 ⁵⁹	1.14961 ⁵⁵	1.18143 ⁵²	44
45	1.03996 ⁶⁹	1.05960 ⁶³	1.11616 ⁵⁹	1.15016 ⁵⁵	1.18194 ⁵¹	45
46	1.04065 ⁶⁸	1.06023 ⁶³	1.11675 ⁵⁸	1.15071 ⁵⁵	1.18245 ⁵¹	46
47	1.04133 ⁶⁹	1.06086 ⁶³	1.11733 ⁵⁹	1.15125 ⁵⁵	1.18297 ⁵²	47
48	1.04202 ⁶⁹	1.06149 ⁶³	1.11792 ⁵⁸	1.15180 ⁵⁵	1.18348 ⁵¹	48
49	1.04271 ⁶⁹	1.06212 ⁶³	1.11850 ⁵⁹	1.15234 ⁵⁴	1.18399 ⁵¹	49
50	1.04339 ⁶⁸	1.06275 ⁶²	1.11909 ⁵⁸	1.15289 ⁵⁵	1.18450 ⁵¹	50
51	1.04407 ⁶⁹	1.06337 ⁶³	1.11967 ⁵⁸	1.15343 ⁵⁴	1.18501 ⁵¹	51
52	1.04476 ⁶⁸	1.06400 ⁶³	1.12025 ⁵⁸	1.15397 ⁵⁴	1.18552 ⁵⁰	52
53	1.04544 ⁶⁸	1.06463 ⁶²	1.12083 ⁵⁸	1.15452 ⁵⁴	1.18602 ⁵⁰	53
54	1.04612 ⁶⁸	1.06525 ⁶³	1.12141 ⁵⁸	1.15506 ⁵⁴	1.18653 ⁵¹	54
55	1.04680 ⁶⁸	1.06588 ⁶²	1.12199 ⁵⁸	1.15560 ⁵⁴	1.18704 ⁵¹	55
56	1.04748 ⁶⁸	1.06650 ⁶³	1.12257 ⁵⁸	1.15614 ⁵⁴	1.18755 ⁵⁰	56
57	1.04816 ⁶⁷	1.06713 ⁶³	1.12315 ⁵⁸	1.15668 ⁵⁴	1.18805 ⁵¹	57
58	1.04883 ⁶⁸	1.06776 ⁶²	1.12373 ⁵⁸	1.15722 ⁵⁴	1.18856 ⁵¹	58
59	1.04951 ⁶⁸	1.06838 ⁶²	1.12431 ⁵⁸	1.15776 ⁵⁴	1.18906 ⁵⁰	59
60	1.05019 ⁶⁸	1.06901 ⁶³	1.12489 ⁵⁸	1.15830 ⁵⁴	1.18957 ⁵¹	60

	15 °	16 °	17	18 °	19 °	
0	1.18957	1.21901	1.24685	1.27328	1.29847	0
1	1.19008 ⁵¹	1.21949 ⁴⁸	1.24730 ⁴⁵	1.27371 ⁴³	1.29888 ⁴¹	1
2	1.19058 ⁵⁰	1.21996 ⁴⁷	1.24776 ⁴⁶	1.27414 ⁴³	1.29929 ⁴¹	2
3	1.19108 ⁵⁰	1.22044 ⁴⁸	1.24821 ⁴⁵	1.27456 ⁴²	1.29970 ⁴¹	3
4	1.19159 ⁵¹	1.22091 ⁴⁷	1.24866 ⁴⁵	1.27499 ⁴³	1.30011 ⁴¹	4
5	1.19209 ⁵⁰	1.22139 ⁴⁸	1.24911 ⁴⁵	1.27542 ⁴³	1.30052 ⁴¹	5
6	1.19259 ⁵⁰	1.22186 ⁴⁷	1.24956 ⁴⁵	1.27585 ⁴³	1.30093 ⁴¹	6
7	1.19309 ⁵¹	1.22234 ⁴⁸	1.25001 ⁴⁵	1.27628 ⁴³	1.30134 ⁴¹	7
8	1.19360 ⁵⁰	1.22281 ⁴⁷	1.25045 ⁴⁴	1.27670 ⁴²	1.30174 ⁴⁰	8
9	1.19410 ⁵⁰	1.22329 ⁴⁸	1.25090 ⁴⁵	1.27713 ⁴³	1.30215 ⁴¹	9
10	1.19460 ⁵⁰	1.22376 ⁴⁷	1.25135 ⁴⁵	1.27756 ⁴³	1.30256 ⁴¹	10
11	1.19510 ⁵⁰	1.22423 ⁴⁷	1.25180 ⁴⁵	1.27799 ⁴³	1.30297 ⁴¹	11
12	1.19560 ⁴⁹	1.22470 ⁴⁷	1.25224 ⁴⁴	1.27841 ⁴²	1.30337 ⁴⁰	12
13	1.19609 ⁵⁰	1.22517 ⁴⁷	1.25269 ⁴⁵	1.27884 ⁴²	1.30378 ⁴⁰	13
14	1.19659 ⁵⁰	1.22564 ⁴⁷	1.25313 ⁴⁴	1.27926 ⁴²	1.30418 ⁴⁰	14
15	1.19709 ⁵⁰	1.22611 ⁴⁷	1.25358 ⁴⁵	1.27969 ⁴²	1.30459 ⁴¹	15
16	1.19759 ⁴⁹	1.22658 ⁴⁷	1.25402 ⁴⁴	1.28011 ⁴²	1.30499 ⁴⁰	16
17	1.19808 ⁴⁹	1.22705 ⁴⁷	1.25447 ⁴⁵	1.28054 ⁴³	1.30540 ⁴¹	17
18	1.19858 ⁵⁰	1.22751 ⁴⁶	1.25491 ⁴⁴	1.28096 ⁴²	1.30580 ⁴⁰	18
19	1.19907 ⁵⁰	1.22798 ⁴⁷	1.25536 ⁴⁵	1.28139 ⁴³	1.30621 ⁴¹	19
20	1.19957 ⁵⁰	1.22845 ⁴⁷	1.25580 ⁴⁴	1.28181 ⁴²	1.30661 ⁴⁰	20
21	1.20006 ⁴⁹	1.22892 ⁴⁷	1.25624 ⁴⁴	1.28223 ⁴²	1.30701 ⁴⁰	21
22	1.20056 ⁵⁰	1.22939 ⁴⁷	1.25669 ⁴⁵	1.28266 ⁴³	1.30742 ⁴¹	22
23	1.20105 ⁴⁹	1.22985 ⁴⁶	1.25713 ⁴⁴	1.28308 ⁴²	1.30782 ⁴⁰	23
24	1.20155 ⁵⁰	1.23032 ⁴⁷	1.25758 ⁴⁵	1.28350 ⁴²	1.30823 ⁴⁰	24
25	1.20204 ⁴⁹	1.23079 ⁴⁷	1.25802 ⁴⁴	1.28392 ⁴²	1.30863 ⁴⁰	25
26	1.20253 ⁴⁹	1.23126 ⁴⁷	1.25846 ⁴⁴	1.28434 ⁴²	1.30903 ⁴⁰	26
27	1.20302 ⁵⁰	1.23172 ⁴⁶	1.25890 ⁴⁴	1.28476 ⁴²	1.30944 ⁴¹	27
28	1.20352 ⁴⁹	1.23219 ⁴⁷	1.25935 ⁴⁵	1.28518 ⁴²	1.30984 ⁴⁰	28
29	1.20401 ⁴⁹	1.23265 ⁴⁶	1.25979 ⁴⁴	1.28560 ⁴²	1.31024 ⁴⁰	29
30	1.20450 ⁴⁹	1.23312 ⁴⁷	1.26023 ⁴⁴	1.28602 ⁴²	1.31064 ⁴⁰	30
31	1.20499 ⁴⁹	1.23359 ⁴⁷	1.26067 ⁴⁴	1.28644 ⁴²	1.31104 ⁴⁰	31
32	1.20548 ⁴⁹	1.23405 ⁴⁶	1.26111 ⁴⁴	1.28686 ⁴¹	1.31144 ⁴⁰	32
33	1.20597 ⁴⁹	1.23451 ⁴⁶	1.26155 ⁴⁴	1.28727 ⁴²	1.31184 ⁴⁰	33
34	1.20646 ⁴⁹	1.23498 ⁴⁷	1.26199 ⁴⁴	1.28769 ⁴²	1.31224 ⁴⁰	34
35	1.20695 ⁴⁹	1.23544 ⁴⁶	1.26243 ⁴⁴	1.28811 ⁴²	1.31264 ⁴⁰	35
36	1.20744 ⁴⁹	1.23590 ⁴⁶	1.26287 ⁴⁴	1.28853 ⁴²	1.31304 ⁴⁰	36
37	1.20793 ⁴⁸	1.23636 ⁴⁶	1.26331 ⁴⁴	1.28894 ⁴¹	1.31344 ⁴⁰	37
38	1.20841 ⁴⁹	1.23682 ⁴⁶	1.26374 ⁴³	1.28936 ⁴²	1.31384 ⁴⁰	38
39	1.20890 ⁴⁹	1.23728 ⁴⁶	1.26418 ⁴⁴	1.28978 ⁴²	1.31424 ⁴⁰	39
40	1.20939 ⁴⁸	1.23774 ⁴⁶	1.26462 ⁴⁴	1.29020 ⁴²	1.31464 ⁴⁰	40
41	1.20987 ⁴⁸	1.23820 ⁴⁶	1.26505 ⁴³	1.29062 ⁴²	1.31504 ⁴⁰	41
42	1.21036 ⁴⁹	1.23866 ⁴⁶	1.26549 ⁴⁴	1.29103 ⁴¹	1.31544 ⁴⁰	42
43	1.21084 ⁴⁸	1.23911 ⁴⁵	1.26592 ⁴³	1.29145 ⁴²	1.31583 ³⁹	43
44	1.21133 ⁴⁸	1.23957 ⁴⁶	1.26636 ⁴⁴	1.29186 ⁴¹	1.31623 ⁴⁰	44
45	1.21181 ⁴⁸	1.24003 ⁴⁶	1.26679 ⁴³	1.29228 ⁴²	1.31663 ⁴⁰	45
46	1.21229 ⁴⁸	1.24049 ⁴⁶	1.26722 ⁴³	1.29269 ⁴¹	1.31703 ⁴⁰	46
47	1.21277 ⁴⁹	1.24094 ⁴⁵	1.26766 ⁴⁴	1.29311 ⁴²	1.31742 ³⁹	47
48	1.21326 ⁴⁸	1.24140 ⁴⁶	1.26809 ⁴³	1.29352 ⁴¹	1.31782 ⁴⁰	48
49	1.21374 ⁴⁸	1.24185 ⁴⁵	1.26853 ⁴⁴	1.29394 ⁴²	1.31821 ³⁹	49
50	1.21422 ⁴⁸	1.24231 ⁴⁶	1.26896 ⁴³	1.29435 ⁴¹	1.31861 ⁴⁰	50
51	1.21470 ⁴⁸	1.24276 ⁴⁵	1.26939 ⁴³	1.29476 ⁴¹	1.31901 ⁴⁰	51
52	1.21518 ⁴⁸	1.24322 ⁴⁶	1.26982 ⁴³	1.29517 ⁴²	1.31940 ³⁹	52
53	1.21566 ⁴⁸	1.24367 ⁴⁵	1.27026 ⁴⁴	1.29559 ⁴²	1.31980 ⁴⁰	53
54	1.21614 ⁴⁸	1.24413 ⁴⁶	1.27069 ⁴³	1.29600 ⁴¹	1.32019 ³⁹	54
55	1.21662 ⁴⁸	1.24458 ⁴⁵	1.27112 ⁴³	1.29641 ⁴¹	1.32059 ⁴⁰	55
56	1.21710 ⁴⁸	1.24503 ⁴⁶	1.27155 ⁴³	1.29682 ⁴¹	1.32098 ³⁹	56
57	1.21758 ⁴⁷	1.24549 ⁴⁶	1.27198 ⁴³	1.29723 ⁴²	1.32138 ⁴⁰	57
58	1.21805 ⁴⁸	1.24594 ⁴⁵	1.27242 ⁴⁴	1.29765 ⁴¹	1.32177 ³⁹	58
59	1.21853 ⁴⁸	1.24640 ⁴⁶	1.27285 ⁴³	1.29806 ⁴¹	1.32217 ⁴⁰	59
60	1.21901	1.24685 ⁴⁵	1.27328 ⁴³	1.29847 ⁴¹	1.32256 ³⁹	60

	20 °	21 °	22 °	23 °	24 °	
0	1.32256	1.34566	1.36788	1.38932	1.41004	0
1	1.32295	1.34604	1.36824	1.38967	1.41038	1
2	1.32334	1.34641	1.36861	1.39002	1.41072	2
3	1.32373	1.34679	1.36897	1.39037	1.41106	3
4	1.32413	1.34716	1.36933	1.39072	1.41140	4
5	1.32452	1.34754	1.36970	1.39107	1.41173	5
6	1.32491	1.34792	1.37006	1.39141	1.41207	6
7	1.32530	1.34829	1.37042	1.39176	1.41241	7
8	1.32569	1.34867	1.37078	1.39211	1.41275	8
9	1.32608	1.34904	1.37115	1.39246	1.41309	9
10	1.32647	1.34942	1.37151	1.39281	1.41343	10
11	1.32686	1.34979	1.37187	1.39316	1.41377	11
12	1.32725	1.35017	1.37223	1.39351	1.41410	12
13	1.32764	1.35054	1.37259	1.39386	1.41444	13
14	1.32803	1.35092	1.37295	1.39421	1.41478	14
15	1.32841	1.35129	1.37331	1.39455	1.41512	15
16	1.32880	1.35166	1.37367	1.39490	1.41546	16
17	1.32919	1.35204	1.37403	1.39525	1.41579	17
18	1.32958	1.35241	1.37439	1.39560	1.41613	18
19	1.32997	1.35279	1.37475	1.39595	1.41647	19
20	1.33036	1.35316	1.37511	1.39630	1.41681	20
21	1.33075	1.35353	1.37547	1.39665	1.41714	21
22	1.33113	1.35390	1.37583	1.39699	1.41748	22
23	1.33152	1.35428	1.37618	1.39734	1.41781	23
24	1.33191	1.35465	1.37654	1.39768	1.41815	24
25	1.33230	1.35502	1.37690	1.39803	1.41848	25
26	1.33268	1.35540	1.37726	1.39838	1.41881	26
27	1.33307	1.35577	1.37761	1.39872	1.41915	27
28	1.33346	1.35614	1.37797	1.39907	1.41948	28
29	1.33384	1.35651	1.37833	1.39941	1.41982	29
30	1.33423	1.35688	1.37869	1.39976	1.42015	30
31	1.33461	1.35725	1.37905	1.40011	1.42048	31
32	1.33500	1.35762	1.37941	1.40045	1.42082	32
33	1.33538	1.35799	1.37976	1.40080	1.42115	33
34	1.33576	1.35835	1.38012	1.40114	1.42149	34
35	1.33615	1.35872	1.38048	1.40149	1.42182	35
36	1.33653	1.35909	1.38083	1.40183	1.42215	36
37	1.33691	1.35946	1.38119	1.40218	1.42249	37
38	1.33730	1.35982	1.38154	1.40252	1.42282	38
39	1.33768	1.36019	1.38190	1.40287	1.42316	39
40	1.33806	1.36056	1.38226	1.40321	1.42349	40
41	1.33844	1.36093	1.38261	1.40355	1.42382	41
42	1.33882	1.36129	1.38297	1.40389	1.42416	42
43	1.33920	1.36166	1.38332	1.40424	1.42449	43
44	1.33959	1.36203	1.38368	1.40458	1.42482	44
45	1.33997	1.36240	1.38403	1.40492	1.42516	45
46	1.34035	1.36276	1.38438	1.40526	1.42549	46
47	1.34073	1.36313	1.38474	1.40561	1.42582	47
48	1.34111	1.36350	1.38509	1.40595	1.42616	48
49	1.34149	1.36386	1.38545	1.40629	1.42649	49
50	1.34187	1.36423	1.38580	1.40663	1.42682	50
51	1.34225	1.36460	1.38615	1.40697	1.42715	51
52	1.34263	1.36496	1.38650	1.40731	1.42748	52
53	1.34301	1.36533	1.38686	1.40765	1.42781	53
54	1.34339	1.36569	1.38721	1.40800	1.42814	54
55	1.34376	1.36606	1.38756	1.40834	1.42847	55
56	1.34414	1.36642	1.38791	1.40868	1.42880	56
57	1.34452	1.36679	1.38827	1.40902	1.42913	57
58	1.34490	1.36715	1.38862	1.40936	1.42946	58
59	1.34528	1.36752	1.38897	1.40970	1.42979	59
60	1.34566	1.36788	1.38932	1.41004	1.43012	60

	25 °	26 °	27 °	28 °	29 °	
0	1.43012	1.44962	1.46859	1.48709	1.50515	0
1	1.43045 33	1.44994 32	1.46890 31	1.48739 30	1.50545 30	1
2	1.43078 33	1.45026 32	1.46921 31	1.48770 31	1.50574 29	2
3	1.43111 33	1.45058 32	1.46953 31	1.48800 30	1.50604 30	3
4	1.43144 33	1.45090 32	1.46984 31	1.48831 31	1.50634 30	4
5	1.43177 33	1.45122 32	1.47015 31	1.48861 30	1.50664 29	5
6	1.43210 33	1.45154 32	1.47046 32	1.48891 31	1.50693 30	6
7	1.43243 32	1.45186 32	1.47078 31	1.48922 30	1.50723 30	7
8	1.43275 32	1.45218 32	1.47109 31	1.48952 31	1.50753 30	8
9	1.43308 33	1.45250 32	1.47140 31	1.48983 30	1.50783 30	9
10	1.43341 33	1.45282 32	1.47171 31	1.49013 31	1.50813 30	10
11	1.43374 33	1.45314 32	1.47202 31	1.49043 30	1.50843 29	11
12	1.43407 33	1.45346 31	1.47233 31	1.49074 31	1.50872 30	12
13	1.43439 32	1.45377 32	1.47264 31	1.49104 30	1.50902 29	13
14	1.43472 33	1.45409 32	1.47295 31	1.49134 31	1.50931 30	14
15	1.43505 33	1.45441 32	1.47326 31	1.49165 30	1.50961 30	15
16	1.43538 32	1.45473 32	1.47357 31	1.49195 30	1.50991 29	16
17	1.43570 33	1.45505 31	1.47388 31	1.49225 31	1.51020 29	17
18	1.43603 32	1.45536 32	1.47419 31	1.49256 30	1.51050 30	18
19	1.43635 33	1.45568 32	1.47450 31	1.49286 30	1.51079 29	19
20	1.43668 33	1.45600 32	1.47481 31	1.49316 30	1.51109 29	20
21	1.43701 32	1.45632 32	1.47512 31	1.49346 30	1.51138 30	21
22	1.43733 33	1.45664 31	1.47543 31	1.49376 31	1.51168 29	22
23	1.43766 33	1.45695 32	1.47574 31	1.49406 31	1.51197 30	23
24	1.43798 32	1.45727 32	1.47605 31	1.49437 30	1.51227 29	24
25	1.43831 33	1.45759 32	1.47636 30	1.49467 30	1.51256 30	25
26	1.43864 33	1.45791 31	1.47666 31	1.49497 30	1.51286 29	26
27	1.43896 32	1.45822 32	1.47697 31	1.49527 30	1.51315 30	27
28	1.43929 32	1.45854 32	1.47728 31	1.49557 30	1.51345 29	28
29	1.43961 33	1.45886 31	1.47759 31	1.49587 30	1.51374 30	29
30	1.43994 33	1.45917 32	1.47790 31	1.49617 30	1.51404 29	30
31	1.44026 32	1.45949 31	1.47821 30	1.49647 30	1.51433 31	31
32	1.44059 33	1.45980 32	1.47851 31	1.49677 30	1.51463 30	32
33	1.44091 32	1.46012 31	1.47882 31	1.49707 30	1.51492 30	33
34	1.44124 33	1.46043 32	1.47913 31	1.49738 30	1.51522 29	34
35	1.44156 32	1.46075 32	1.47944 30	1.49768 30	1.51551 29	35
36	1.44188 33	1.46107 31	1.47974 31	1.49798 30	1.51580 30	36
37	1.44221 33	1.46138 32	1.48005 31	1.49828 30	1.51610 29	37
38	1.44253 32	1.46170 31	1.48036 31	1.49858 30	1.51639 30	38
39	1.44286 33	1.46201 32	1.48067 30	1.49888 30	1.51669 29	39
40	1.44318 32	1.46233 31	1.48097 31	1.49918 30	1.51698 29	40
41	1.44350 33	1.46264 32	1.48128 31	1.49948 30	1.51727 30	41
42	1.44383 32	1.46296 31	1.48159 30	1.49978 30	1.51757 29	42
43	1.44415 33	1.46327 32	1.48189 31	1.50008 30	1.51786 29	43
44	1.44448 33	1.46359 31	1.48220 31	1.50038 29	1.51815 29	44
45	1.44480 32	1.46390 31	1.48251 31	1.50067 30	1.51844 30	45
46	1.44512 32	1.46421 32	1.48282 30	1.50097 30	1.51874 29	46
47	1.44544 32	1.46453 31	1.48312 31	1.50127 30	1.51903 29	47
48	1.44577 33	1.46484 32	1.48343 31	1.50157 30	1.51932 30	48
49	1.44609 32	1.46516 31	1.48374 30	1.50187 30	1.51962 29	49
50	1.44641 32	1.46547 31	1.48404 31	1.50217 30	1.51991 29	50
51	1.44673 32	1.46578 31	1.48435 30	1.50247 29	1.52020 29	51
52	1.44705 32	1.46609 32	1.48465 31	1.50276 30	1.52049 30	52
53	1.44738 33	1.46641 31	1.48496 30	1.50306 30	1.52079 29	53
54	1.44770 32	1.46672 31	1.48526 31	1.50336 30	1.52108 29	54
55	1.44802 22	1.46703 31	1.48557 30	1.50366 30	1.52137 29	55
56	1.44834 32	1.46734 32	1.48587 31	1.50396 29	1.52166 29	56
57	1.44866 32	1.46766 31	1.48618 30	1.50425 30	1.52195 30	57
58	1.44898 32	1.46797 31	1.48648 31	1.50455 30	1.52225 29	58
59	1.44930 32	1.46828 31	1.48679 30	1.50485 30	1.52254 29	59
60	1.44962 32	1.46859 31	1.48709 30	1.50515 30	1.52283 29	60

	30 °	31 °	32 °	33 °	34 °	
0	1.52283	1.54015	1.55715	1.57386	1.59031	0
1	1.52312	1.54044	1.55743	1.57414	1.59058	1
2	1.52341	1.54072	1.55771	1.57441	1.59085	2
3	1.52370	1.54101	1.55799	1.57469	1.59113	3
4	1.52399	1.54129	1.55827	1.57496	1.59140	4
5	1.52429	1.54158	1.55855	1.57524	1.59167	5
6	1.52458	1.54187	1.55883	1.57552	1.59194	6
7	1.52487	1.54215	1.55911	1.57579	1.59222	7
8	1.52516	1.54244	1.55939	1.57607	1.59249	8
9	1.52545	1.54272	1.55967	1.57634	1.59276	9
10	1.52574	1.54301	1.55995	1.57662	1.59303	10
11	1.52603	1.54329	1.56023	1.57689	1.59330	11
12	1.52632	1.54358	1.56051	1.57717	1.59357	12
13	1.52661	1.54386	1.56079	1.57744	1.59384	13
14	1.52690	1.54415	1.56107	1.57772	1.59412	14
15	1.52719	1.54443	1.56135	1.57799	1.59439	15
16	1.52748	1.54471	1.56163	1.57827	1.59466	16
17	1.52777	1.54500	1.56191	1.57854	1.59493	17
18	1.52806	1.54528	1.56219	1.57882	1.59520	18
19	1.52835	1.54557	1.56247	1.57909	1.59547	19
20	1.52864	1.54585	1.56275	1.57937	1.59574	20
21	1.52893	1.54614	1.56303	1.57964	1.59601	21
22	1.52922	1.54642	1.56331	1.57992	1.59628	22
23	1.52951	1.54671	1.56359	1.58019	1.59655	23
24	1.52980	1.54699	1.56387	1.58047	1.59682	24
25	1.53008	1.54727	1.56414	1.58074	1.59709	25
26	1.53037	1.54756	1.56442	1.58101	1.59736	26
27	1.53066	1.54784	1.56470	1.58129	1.59763	27
28	1.53095	1.54812	1.56498	1.58156	1.59790	28
29	1.53124	1.54841	1.56526	1.58184	1.59817	29
30	1.53153	1.54869	1.56554	1.58211	1.59844	30
31	1.53182	1.54897	1.56582	1.58238	1.59871	31
32	1.53211	1.54925	1.56610	1.58266	1.59898	32
33	1.53240	1.54954	1.56637	1.58293	1.59925	33
34	1.53268	1.54982	1.56665	1.58321	1.59952	34
35	1.53297	1.55010	1.56693	1.58348	1.59979	35
36	1.53326	1.55039	1.56721	1.58375	1.60006	36
37	1.53355	1.55067	1.56748	1.58403	1.60033	37
38	1.53384	1.55095	1.56776	1.58430	1.60060	38
39	1.53413	1.55124	1.56804	1.58458	1.60087	39
40	1.53442	1.55152	1.56832	1.58485	1.60114	40
41	1.53471	1.55180	1.56860	1.58512	1.60141	41
42	1.53499	1.55208	1.56887	1.58540	1.60168	42
43	1.53528	1.55237	1.56915	1.58567	1.60195	43
44	1.53557	1.55265	1.56943	1.58594	1.60222	44
45	1.53585	1.55293	1.56971	1.58622	1.60249	45
46	1.53614	1.55321	1.56998	1.58649	1.60276	46
47	1.53643	1.55350	1.57026	1.58676	1.60303	47
48	1.53672	1.55378	1.57054	1.58704	1.60330	48
49	1.53700	1.55406	1.57081	1.58731	1.60357	49
50	1.53729	1.55434	1.57109	1.58758	1.60384	50
51	1.53758	1.55462	1.57137	1.58785	1.60411	51
52	1.53786	1.55490	1.57165	1.58813	1.60438	52
53	1.53815	1.55518	1.57192	1.58840	1.60465	53
54	1.53843	1.55546	1.57220	1.58867	1.60492	54
55	1.53872	1.55575	1.57248	1.58895	1.60519	55
56	1.53901	1.55603	1.57275	1.58922	1.60545	56
57	1.53929	1.55631	1.57303	1.58949	1.60572	57
58	1.53958	1.55659	1.57331	1.58977	1.60599	58
59	1.53986	1.55687	1.57358	1.59004	1.60626	59
60	1.54015	1.55715	1.57386	1.59031	1.60653	60

	35 °	36 °	37 °	38 °	39 °	
0	1.60653	1.62254	1.63837	1.65405	1.66959	0
1	1.60680	1.62281	1.63863	1.65431	1.66985	1
2	1.60707	1.62307	1.63890	1.65457	1.67011	2
3	1.60734	1.62334	1.63916	1.65483	1.67036	3
4	1.60760	1.62360	1.63942	1.65509	1.67062	4
5	1.60787	1.62387	1.63969	1.65535	1.67088	5
6	1.60814	1.62413	1.63995	1.65561	1.67114	6
7	1.60841	1.62440	1.64021	1.65587	1.67139	7
8	1.60867	1.62466	1.64047	1.65613	1.67165	8
9	1.60894	1.62493	1.64074	1.65639	1.67191	9
10	1.60921	1.62519	1.64100	1.65665	1.67217	10
11	1.60948	1.62546	1.64126	1.65691	1.67243	11
12	1.60975	1.62572	1.64152	1.65717	1.67268	12
13	1.61001	1.62599	1.64179	1.65743	1.67294	13
14	1.61028	1.62625	1.64205	1.65769	1.67320	14
15	1.61055	1.62652	1.64231	1.65794	1.67346	15
16	1.61082	1.62678	1.64257	1.65820	1.67371	16
17	1.61108	1.62705	1.64284	1.65846	1.67397	17
18	1.61135	1.62731	1.64310	1.65872	1.67423	18
19	1.61162	1.62758	1.64336	1.65898	1.67448	19
20	1.61189	1.62784	1.64362	1.65924	1.67474	20
21	1.61216	1.62810	1.64388	1.65950	1.67500	21
22	1.61242	1.62837	1.64414	1.65976	1.67526	22
23	1.61269	1.62863	1.64440	1.66002	1.67551	23
24	1.61296	1.62890	1.64467	1.66028	1.67577	24
25	1.61323	1.62916	1.64493	1.66053	1.67603	25
26	1.61349	1.62942	1.64519	1.66079	1.67628	26
27	1.61376	1.62969	1.64545	1.66105	1.67654	27
28	1.61403	1.62995	1.64571	1.66131	1.67680	28
29	1.61429	1.63022	1.64597	1.66157	1.67705	29
30	1.61456	1.63048	1.64623	1.66183	1.67731	30
31	1.61483	1.63074	1.64649	1.66209	1.67757	31
32	1.61509	1.63101	1.64675	1.66235	1.67782	32
33	1.61536	1.63127	1.64701	1.66261	1.67808	33
34	1.61562	1.63154	1.64728	1.66287	1.67834	34
35	1.61589	1.63180	1.64754	1.66312	1.67859	35
36	1.61616	1.63206	1.64780	1.66338	1.67885	36
37	1.61642	1.63233	1.64806	1.66364	1.67911	37
38	1.61669	1.63259	1.64832	1.66390	1.67937	38
39	1.61695	1.63286	1.64858	1.66416	1.67962	39
40	1.61722	1.63312	1.64884	1.66442	1.67988	40
41	1.61749	1.63338	1.64910	1.66468	1.68014	41
42	1.61775	1.63365	1.64936	1.66494	1.68039	42
43	1.61802	1.63391	1.64962	1.66520	1.68065	43
44	1.61828	1.63417	1.64988	1.66546	1.68090	44
45	1.61855	1.63443	1.65015	1.66571	1.68116	45
46	1.61882	1.63470	1.65041	1.66597	1.68142	46
47	1.61908	1.63496	1.65067	1.66623	1.68167	47
48	1.61935	1.63522	1.65093	1.66649	1.68193	48
49	1.61961	1.63549	1.65119	1.66675	1.68218	49
50	1.61988	1.63575	1.65145	1.66701	1.68244	50
51	1.62015	1.63601	1.65171	1.66727	1.68270	51
52	1.62041	1.63627	1.65197	1.66753	1.68295	52
53	1.62068	1.63654	1.65223	1.66778	1.68321	53
54	1.62094	1.63680	1.65249	1.66804	1.68346	54
55	1.62121	1.63706	1.65275	1.66830	1.68372	55
56	1.62148	1.63732	1.65301	1.66856	1.68398	56
57	1.62174	1.63758	1.65327	1.66882	1.68423	57
58	1.62201	1.63785	1.65353	1.66907	1.68449	58
59	1.62227	1.63811	1.65379	1.66933	1.68474	59
60	1.62254	1.63837	1.65405	1.66959	1.68500	60

	40 °	41 °	42 °	43 °	44 °	
0	1.68500 26	1.70033 25	1.71558 25	1.73077 25	1.74591 25	0
1	1.68526 26	1.70058 26	1.71583 26	1.73102 25	1.74616 25	1
2	1.68551 26	1.70084 26	1.71609 26	1.73127 25	1.74641 25	2
3	1.68577 26	1.70109 25	1.71634 25	1.73153 26	1.74666 26	3
4	1.68602 25	1.70135 26	1.71659 25	1.73178 25	1.74692 26	4
5	1.68628 26	1.70160 25	1.71685 26	1.73203 25	1.74717 25	5
6	1.68654 26	1.70186 25	1.71710 25	1.73228 25	1.74742 25	6
7	1.68679 26	1.70211 26	1.71735 26	1.73254 25	1.74767 26	7
8	1.68705 26	1.70237 26	1.71761 26	1.73279 25	1.74793 25	8
9	1.68730 25	1.70262 25	1.71786 25	1.73304 25	1.74818 25	9
10	1.68756 26	1.70288 26	1.71811 25	1.73329 25	1.74843 25	10
11	1.68782 25	1.70313 26	1.71836 26	1.73354 26	1.74868 25	11
12	1.68807 26	1.70339 25	1.71862 25	1.73380 26	1.74893 25	12
13	1.68833 26	1.70364 26	1.71887 25	1.73405 25	1.74919 26	13
14	1.68858 25	1.70390 26	1.71913 26	1.73430 26	1.74944 25	14
15	1.68884 26	1.70415 25	1.71938 25	1.73456 26	1.74969 25	15
16	1.68910 26	1.70440 26	1.71963 26	1.73481 25	1.74994 26	16
17	1.68935 26	1.70466 25	1.71989 25	1.73506 26	1.75020 26	17
18	1.68961 26	1.70491 26	1.72014 26	1.73532 25	1.75045 25	18
19	1.68986 26	1.70517 25	1.72040 25	1.73557 25	1.75070 25	19
20	1.69012 26	1.70542 25	1.72065 25	1.73582 25	1.75095 25	20
21	1.69038 26	1.70567 26	1.72090 26	1.73607 25	1.75120 25	21
22	1.69063 25	1.70593 25	1.72116 26	1.73632 26	1.75145 26	22
23	1.69089 26	1.70618 25	1.72141 25	1.73658 25	1.75171 25	23
24	1.69114 26	1.70644 25	1.72166 26	1.73683 25	1.75196 25	24
25	1.69140 26	1.70669 25	1.72192 25	1.73708 25	1.75221 25	25
26	1.69166 26	1.70694 26	1.72217 25	1.73733 25	1.75246 25	26
27	1.69191 25	1.70720 26	1.72242 26	1.73758 26	1.75272 26	27
28	1.69217 25	1.70745 26	1.72268 25	1.73784 25	1.75297 25	28
29	1.69242 26	1.70771 25	1.72293 25	1.73809 25	1.75322 25	29
30	1.69268 26	1.70796 25	1.72318 25	1.73834 25	1.75347 25	30
31	1.69293 26	1.70821 25	1.72343 26	1.73859 25	1.75372 26	31
32	1.69319 25	1.70847 26	1.72369 25	1.73884 26	1.75398 26	32
33	1.69344 26	1.70872 25	1.72394 25	1.73910 25	1.75423 25	33
34	1.69370 25	1.70898 26	1.72419 26	1.73935 25	1.75448 26	34
35	1.69395 26	1.70923 25	1.72445 25	1.73960 25	1.75474 26	35
36	1.69421 26	1.70948 25	1.72470 25	1.73985 25	1.75499 25	36
37	1.69446 25	1.70974 26	1.72495 26	1.74010 26	1.75524 25	37
38	1.69472 26	1.70999 25	1.72521 25	1.74036 25	1.75550 26	38
39	1.69497 25	1.71025 26	1.72546 25	1.74061 25	1.75575 26	39
40	1.69523 26	1.71050 25	1.72571 25	1.74086 25	1.75600 25	40
41	1.69548 26	1.71075 26	1.72596 26	1.74111 25	1.75625 25	41
42	1.69574 25	1.71101 25	1.72622 25	1.74136 26	1.75650 26	42
43	1.69599 25	1.71126 25	1.72647 25	1.74162 25	1.75676 26	43
44	1.69625 26	1.71152 26	1.72672 25	1.74187 25	1.75701 25	44
45	1.69650 26	1.71177 25	1.72698 26	1.74212 25	1.75726 25	45
46	1.69676 26	1.71202 26	1.72723 25	1.74237 25	1.75752 26	46
47	1.69701 25	1.71228 26	1.72748 25	1.74262 26	1.75777 25	47
48	1.69727 26	1.71253 25	1.72774 26	1.74288 26	1.75802 25	48
49	1.69752 26	1.71279 26	1.72799 25	1.74313 25	1.75827 25	49
50	1.69778 26	1.71304 25	1.72824 25	1.74338 25	1.75852 25	50
51	1.69803 25	1.71329 26	1.72849 26	1.74363 26	1.75877 25	51
52	1.69829 25	1.71355 25	1.72875 25	1.74389 25	1.75903 26	52
53	1.69854 26	1.71380 25	1.72900 25	1.74414 25	1.75928 25	53
54	1.69880 25	1.71406 26	1.72925 25	1.74439 26	1.75953 25	54
55	1.69905 26	1.71431 25	1.72951 26	1.74465 25	1.75978 25	55
56	1.69931 25	1.71456 26	1.72976 25	1.74490 25	1.76003 25	56
57	1.69956 26	1.71482 26	1.73001 25	1.74515 26	1.76029 26	57
58	1.69982 25	1.71507 25	9.73027 25	1.74541 25	1.76054 25	58
59	1.70007 26	1.71533 25	1.73052 25	1.74566 25	1.76079 25	59
60	1.70033 26	1.71558 25	1.73077 25	1.74591 25	1.76104 25	60

	45 °	46 °	47 °	48 °	49 °	
0	1.76104	1.77616	1.79130	1.80648	1.82171	0
1	1.76129	1.77641	1.79155	1.80673	1.82196	1
2	1.76154	1.77666	1.79181	1.80699	1.82222	2
3	1.76180	1.77692	1.79206	1.80724	1.82247	3
4	1.76205	1.77717	1.79231	1.80750	1.82273	4
5	1.76230	1.77742	1.79257	1.80775	1.82298	5
6	1.76255	1.77767	1.79282	1.80800	1.82323	6
7	1.76281	1.77793	1.79307	1.80826	1.82349	7
8	1.76306	1.77818	1.79333	1.80851	1.82374	8
9	1.76331	1.77843	1.79358	1.80877	1.82400	9
10	1.76356	1.77868	1.79383	1.80902	1.82425	10
11	1.76381	1.77893	1.79409	1.80927	1.82451	11
12	1.76406	1.77918	1.79434	1.80953	1.82476	12
13	1.76432	1.77944	1.79459	1.80978	1.82502	13
14	1.76457	1.77969	1.79484	1.81004	1.82527	14
15	1.76482	1.77994	1.79510	1.81029	1.82553	15
16	1.76507	1.78019	1.79535	1.81054	1.82578	16
17	1.76533	1.78045	1.79560	1.81080	1.82604	17
18	1.76558	1.78070	1.79586	1.81105	1.82629	18
19	1.76583	1.78095	1.79611	1.81130	1.82655	19
20	1.76608	1.78121	1.79636	1.81155	1.82680	20
21	1.76633	1.78146	1.79661	1.81181	1.82706	21
22	1.76658	1.78171	1.79687	1.81206	1.82731	22
23	1.76684	1.78197	1.79712	1.81232	1.82757	23
24	1.76709	1.78222	1.79737	1.81257	1.82782	24
25	1.76734	1.78247	1.79762	1.81282	1.82808	25
26	1.76759	1.78272	1.79788	1.81308	1.82833	26
27	1.76785	1.78298	1.79813	1.81333	1.82859	27
28	1.76810	1.78323	1.79838	1.81358	1.82884	28
29	1.76835	1.78348	1.79864	1.81384	1.82910	29
30	1.76860	1.78373	1.79889	1.81409	1.82935	30
31	1.76885	1.78398	1.79914	1.81434	1.82961	31
32	1.76910	1.78423	1.79940	1.81460	1.82986	32
33	1.76936	1.78449	1.79965	1.81485	1.83012	33
34	1.76961	1.78474	1.79990	1.81510	1.83037	34
35	1.76986	1.78499	1.80016	1.81536	1.83063	35
36	1.77011	1.78524	1.80041	1.81561	1.83088	36
37	1.77037	1.78550	1.80066	1.81586	1.83114	37
38	1.77062	1.78575	1.80091	1.81612	1.83139	38
39	1.77087	1.78600	1.80117	1.81637	1.83165	39
40	1.77112	1.78625	1.80142	1.81663	1.83190	40
41	1.77137	1.78651	1.80167	1.81688	1.83216	41
42	1.77162	1.78676	1.80193	1.81714	1.83241	42
43	1.77188	1.78701	1.80218	1.81739	1.83267	43
44	1.77213	1.78726	1.80243	1.81765	1.83292	44
45	1.77238	1.78752	1.80269	1.81790	1.83318	45
46	1.77263	1.78777	1.80294	1.81815	1.83343	46
47	1.77289	1.78802	1.80319	1.81841	1.83369	47
48	1.77314	1.78827	1.80345	1.81866	1.83394	48
49	1.77339	1.78853	1.80370	1.81892	1.83420	49
50	1.77364	1.78878	1.80395	1.81917	1.83445	50
51	1.77389	1.78903	1.80421	1.81943	1.83471	51
52	1.77414	1.78928	1.80446	1.81968	1.83496	52
53	1.77440	1.78954	1.80471	1.81994	1.83522	53
54	1.77465	1.78979	1.80497	1.82019	1.83548	54
55	1.77490	1.79004	1.80522	1.82044	1.83573	55
56	1.77515	1.79029	1.80547	1.82070	1.83599	56
57	1.77541	1.79055	1.80572	1.82095	1.83624	57
58	1.77566	1.79080	1.80598	1.82121	1.83650	58
59	1.77591	1.79105	1.80623	1.82146	1.83675	59
60	1.77616	1.79130	1.80648	1.82171	1.83701	60

	50 °	51 °	52 °	53 °	54 °	
1						1
0	1.83701 26	1.85240 26	1.86790 26	1.88354 26	1.89932 26	0
1	1.83727 25	1.85266 26	1.86816 26	1.88380 26	1.89958 26	1
2	1.83752 25	1.85292 25	1.86842 26	1.88406 26	1.89985 27	2
3	1.83778 26	1.85317 25	1.86868 26	1.88433 27	1.90011 26	3
4	1.83803 25	1.85343 26	1.86894 26	1.88459 26	1.90038 27	4
5	1.83829 26	1.85369 26	1.86920 26	1.88485 26	1.90064 26	5
6	1.83855 26	1.85395 25	1.86946 26	1.88511 26	1.90090 26	6
7	1.83880 25	1.85420 25	1.86972 26	1.88537 27	1.90117 26	7
8	1.83906 26	1.85446 26	1.86998 26	1.88564 26	1.90143 27	8
9	1.83931 25	1.85472 26	1.87024 26	1.88590 26	1.90170 26	9
10	1.83957 26	1.85498 26	1.87050 26	1.88616 26	1.90196 26	10
11	1.83983 25	1.85523 25	1.87076 26	1.88642 26	1.90222 27	11
12	1.84008 26	1.85549 26	1.87102 26	1.88668 26	1.90249 26	12
13	1.84034 25	1.85575 26	1.87128 26	1.88695 27	1.90275 26	13
14	1.84059 26	1.85601 25	1.87154 26	1.88721 26	1.90302 27	14
15	1.84085 26	1.85626 26	1.87180 26	1.88747 26	1.90328 26	15
16	1.84111 25	1.85652 26	1.87206 26	1.88773 27	1.90355 26	16
17	1.84136 26	1.85678 26	1.87232 26	1.88800 26	1.90381 27	17
18	1.84162 25	1.85704 25	1.87258 26	1.88826 26	1.90408 26	18
19	1.84187 26	1.85729 26	1.87284 26	1.88852 26	1.90434 27	19
20	1.84213 26	1.85755 26	1.87310 26	1.88878 26	1.90461 27	20
21	1.84239 25	1.85781 26	1.87336 26	1.88904 27	1.90488 26	21
22	1.84264 26	1.85807 25	1.87362 26	1.88931 26	1.90514 27	22
23	1.84290 25	1.85832 26	1.87388 26	1.88957 26	1.90541 26	23
24	1.84315 26	1.85858 26	1.87414 26	1.88983 27	1.90567 27	24
25	1.84341 26	1.85884 26	1.87440 26	1.89010 26	1.90594 27	25
26	1.84367 25	1.85910 26	1.87466 26	1.89036 26	1.90621 26	26
27	1.84392 26	1.85936 25	1.87492 26	1.89062 26	1.90647 27	27
28	1.84418 25	1.85961 26	1.87518 26	1.89088 27	1.90674 26	28
29	1.84443 26	1.85987 26	1.87544 26	1.89115 26	1.90700 27	29
30	1.84469 26	1.86013 26	1.87570 26	1.89141 26	1.90727 27	30
31	1.84495 25	1.86039 26	1.87596 26	1.89167 27	1.90754 26	31
32	1.84520 26	1.86065 26	1.87622 26	1.89194 26	1.90780 27	32
33	1.84546 26	1.86091 26	1.87648 26	1.89220 26	1.90807 27	33
34	1.84572 25	1.86117 26	1.87675 27	1.89246 27	1.90833 26	34
35	1.84597 26	1.86142 26	1.87701 26	1.89273 26	1.90860 27	35
36	1.84623 26	1.86168 26	1.87727 26	1.89299 26	1.90887 26	36
37	1.84649 25	1.86194 26	1.87753 26	1.89325 27	1.90913 27	37
38	1.84674 26	1.86220 26	1.87779 26	1.89352 26	1.90940 27	38
39	1.84700 26	1.86246 26	1.87805 26	1.89378 26	1.90966 26	39
40	1.84726 26	1.86272 26	1.87831 26	1.89404 27	1.90993 27	40
41	1.84752 25	1.86298 26	1.87857 26	1.89431 26	1.91020 26	41
42	1.84777 26	1.86324 26	1.87883 26	1.89457 27	1.91046 27	42
43	1.84803 26	1.86350 26	1.87909 26	1.89484 26	1.91073 27	43
44	1.84829 25	1.86376 26	1.87935 27	1.89510 26	1.91100 26	44
45	1.84854 26	1.86401 26	1.87962 26	1.89536 27	1.91126 27	45
46	1.84880 26	1.86427 26	1.87988 26	1.89563 26	1.91153 27	46
47	1.84906 26	1.86453 26	1.88014 26	1.89589 26	1.91180 26	47
48	1.84932 25	1.86479 26	1.88040 26	1.89615 27	1.91206 27	48
49	1.84957 26	1.86505 26	1.88066 26	1.89642 26	1.91233 27	49
50	1.84983 26	1.86531 26	1.88092 26	1.89668 27	1.91260 27	50
51	1.85009 26	1.86557 26	1.88118 26	1.89695 26	1.91287 26	51
52	1.85035 25	1.86583 26	1.88144 26	1.89721 26	1.91313 27	52
53	1.85060 26	1.86609 26	1.88171 26	1.89747 27	1.91340 27	53
54	1.85086 26	1.86635 25	1.88197 26	1.89774 26	1.91367 26	54
55	1.85112 25	1.86660 26	1.88223 26	1.89800 27	1.91393 27	55
56	1.85137 26	1.86686 26	1.88249 26	1.89827 26	1.91420 27	56
57	1.85163 26	1.86712 26	1.88275 27	1.89853 26	1.91447 27	57
58	1.85189 25	1.86738 26	1.88302 26	1.89879 27	1.91474 26	58
59	1.85214 26	1.86764 26	1.88328 26	1.89906 26	1.91500 27	59
60	1.85240 26	1.86790 26	1.88354 26	1.89932 26	1.91527 27	60

	55 °	56 °	57 °	58 °	59 °	
0	1.91527	1.93143	1.94781	1.96444	1.98135	0
1	1.91554	1.93170	1.94809	1.96472	1.98163	1
2	1.91581	1.93197	1.94836	1.96500	1.98192	2
3	1.91608	1.93224	1.94864	1.96528	1.98220	3
4	1.91635	1.93252	1.94891	1.96556	1.98249	4
5	1.91661	1.93279	1.94919	1.96584	1.98277	5
6	1.91688	1.93306	1.94947	1.96612	1.98306	6
7	1.91715	1.93333	1.94974	1.96640	1.98334	7
8	1.91741	1.93361	1.95002	1.96668	1.98363	8
9	1.91768	1.93388	1.95029	1.96696	1.98391	9
10	1.91795	1.93415	1.95057	1.96724	1.98420	10
11	1.91822	1.93442	1.95085	1.96752	1.98448	11
12	1.91849	1.93469	1.95112	1.96780	1.98477	12
13	1.91875	1.93497	1.95140	1.96808	1.98506	13
14	1.91902	1.93524	1.95167	1.96837	1.98534	14
15	1.91929	1.93551	1.95195	1.96865	1.98563	15
16	1.91956	1.93578	1.95223	1.96893	1.98591	16
17	1.91982	1.93606	1.95250	1.96921	1.98620	17
18	1.92009	1.93633	1.95278	1.96949	1.98648	18
19	1.92036	1.93660	1.95305	1.96977	1.98677	19
20	1.92063	1.93687	1.95333	1.97005	1.98706	20
21	1.92090	1.93714	1.95361	1.97033	1.98734	21
22	1.92117	1.93742	1.95388	1.97061	1.98763	22
23	1.92144	1.93769	1.95416	1.97089	1.98792	23
24	1.92171	1.93796	1.95443	1.97117	1.98820	24
25	1.92198	1.93824	1.95471	1.97146	1.98849	25
26	1.92225	1.93851	1.95499	1.97174	1.98877	26
27	1.92252	1.93878	1.95526	1.97202	1.98906	27
28	1.92279	1.93905	1.95554	1.97230	1.98935	28
29	1.92306	1.93933	1.95581	1.97258	1.98963	29
30	1.92333	1.93960	1.95609	1.97286	1.98992	30
31	1.92360	1.93987	1.95637	1.97314	1.99021	31
32	1.92387	1.94015	1.95664	1.97342	1.99049	32
33	1.92414	1.94042	1.95692	1.97371	1.99078	33
34	1.92440	1.94069	1.95720	1.97399	1.99107	34
35	1.92467	1.94096	1.95747	1.97427	1.99136	35
36	1.92494	1.94124	1.95775	1.97455	1.99164	36
37	1.92521	1.94151	1.95803	1.97484	1.99193	37
38	1.92548	1.94178	1.95830	1.97512	1.99222	38
39	1.92575	1.94206	1.95858	1.97540	1.99251	39
40	1.92602	1.94233	1.95886	1.97568	1.99280	40
41	1.92629	1.94260	1.95914	1.97596	1.99308	41
42	1.92656	1.94288	1.95942	1.97625	1.99337	42
43	1.92683	1.94315	1.95970	1.97653	1.99366	43
44	1.92710	1.94343	1.95997	1.97681	1.99395	44
45	1.92737	1.94370	1.96025	1.97709	1.99423	45
46	1.92764	1.94397	1.96053	1.97738	1.99452	46
47	1.92791	1.94425	1.96081	1.97766	1.99481	47
48	1.92818	1.94452	1.96109	1.97794	1.99510	48
49	1.92845	1.94480	1.96137	1.97823	1.99539	49
50	1.92872	1.94507	1.96165	1.97851	1.99568	50
51	1.92899	1.94534	1.96193	1.97879	1.99597	51
52	1.92926	1.94562	1.96221	1.97908	1.99626	52
53	1.92953	1.94589	1.96249	1.97936	1.99655	53
54	1.92980	1.94617	1.96276	1.97965	1.99684	54
55	1.93008	1.94644	1.96304	1.97993	1.99712	55
56	1.93035	1.94671	1.96332	1.98021	1.99741	56
57	1.93062	1.94699	1.96360	1.98050	1.99770	57
58	1.93089	1.94726	1.96388	1.98078	1.99799	58
59	1.93116	1.94754	1.96416	1.98107	1.99828	59
60	1.93143	1.94781	1.96444	1.98135	1.99857	60

	60 °	61 °	62 °	63 °	64 °	
0	1.99857 29	2.01613 29	2.03406 30	2.05240 31	2.07121 32	0
1	1.99886 29	2.01642 30	2.03436 30	2.05271 31	2.07153 31	1
2	1.99915 29	2.01672 30	2.03466 30	2.05302 31	2.07184 32	2
3	1.99944 29	2.01701 29	2.03497 31	2.05333 31	2.07216 32	3
4	1.99973 29	2.01731 30	2.03527 30	2.05364 31	2.07248 32	4
5	2.00002 29	2.01760 29	2.03557 30	2.05395 31	2.07280 32	5
6	2.00031 29	2.01790 30	2.03587 31	2.05426 31	2.07312 32	6
7	2.00060 29	2.01819 29	2.03618 30	2.05457 31	2.07343 32	7
8	2.00089 29	2.01849 30	2.03648 30	2.05488 31	2.07375 32	8
9	2.00118 29	2.01878 29	2.03678 30	2.05519 31	2.07407 32	9
10	2.00147 29	2.01908 30	2.03708 30	2.05550 31	2.07439 32	10
11	2.00176 29	2.01938 30	2.03739 30	2.05581 31	2.07471 32	11
12	2.00205 29	2.01968 30	2.03769 30	2.05612 32	2.07503 32	12
13	2.00235 30	2.01997 29	2.03800 31	2.05644 32	2.07535 32	13
14	2.00264 29	2.02027 30	2.03830 30	2.05675 31	2.07567 32	14
15	2.00293 29	2.02057 30	2.03860 30	2.05706 31	2.07599 32	15
16	2.00322 29	2.02087 30	2.03891 31	2.05737 32	2.07631 32	16
17	2.00352 30	2.02116 30	2.03921 30	2.05769 32	2.07663 32	17
18	2.00381 29	2.02146 30	2.03951 31	2.05800 31	2.07695 32	18
19	2.00410 29	2.02176 30	2.03982 30	2.05831 31	2.07727 32	19
20	2.00439 29	2.02206 30	2.04012 31	2.05862 31	2.07759 32	20
21	2.00468 29	2.02236 30	2.04043 31	2.05893 32	2.07791 32	21
22	2.00497 29	2.02266 30	2.04073 31	2.05925 31	2.07823 32	22
23	2.00527 30	2.02295 29	2.04104 30	2.05956 31	2.07855 32	23
24	2.00556 29	2.02325 30	2.04134 31	2.05987 32	2.07887 32	24
25	2.00585 29	2.02355 30	2.04165 31	2.06019 31	2.07919 33	25
26	2.00614 30	2.02385 30	2.04195 31	2.06050 31	2.07952 32	26
27	2.00644 29	2.02414 29	2.04226 30	2.06081 32	2.07984 32	27
28	2.00673 29	2.02444 30	2.04256 31	2.06113 31	2.08016 32	28
29	2.00702 29	2.02474 30	2.04287 30	2.06144 31	2.08048 32	29
30	2.00731 29	2.02504 30	2.04317 31	2.06175 31	2.08080 32	30
31	2.00760 29	2.02534 30	2.04348 31	2.06206 32	2.08112 32	31
32	2.00789 30	2.02564 30	2.04379 30	2.06238 31	2.08144 33	32
33	2.00819 30	2.02594 30	2.04409 31	2.06269 32	2.08177 32	33
34	2.00848 29	2.02624 30	2.04440 30	2.06301 31	2.08209 32	34
35	2.00877 29	2.02653 29	2.04470 31	2.06332 31	2.08241 32	35
36	2.00906 30	2.02683 30	2.04501 31	2.06363 32	2.08273 32	36
37	2.00936 30	2.02713 30	2.04532 31	2.06395 31	2.08305 33	37
38	2.00965 29	2.02743 30	2.04563 30	2.06426 32	2.08338 32	38
39	2.00994 29	2.02773 30	2.04593 31	2.06458 32	2.08370 32	39
40	2.01023 29	2.02803 30	2.04624 31	2.06489 31	2.08402 32	40
41	2.01053 29	2.02833 30	2.04655 31	2.06520 32	2.08434 33	41
42	2.01082 29	2.02863 30	2.04686 30	2.06552 31	2.08467 32	42
43	2.01111 30	2.02893 30	2.04716 31	2.06583 32	2.08499 33	43
44	2.01141 30	2.02923 30	2.04747 31	2.06615 32	2.08532 32	44
45	2.01170 29	2.02954 31	2.04778 31	2.06646 32	2.08564 32	45
46	2.01200 30	2.02984 30	2.04809 31	2.06678 32	2.08596 33	46
47	2.01229 29	2.03014 30	2.04839 30	2.06709 31	2.08629 32	47
48	2.01258 29	2.03044 30	2.04870 31	2.06741 32	2.08661 32	48
49	2.01288 30	2.03074 30	2.04901 31	2.06772 32	2.08694 33	49
50	2.01317 29	2.03104 30	2.04932 31	2.06804 32	2.08726 32	50
51	2.01347 30	2.03134 30	2.04963 31	2.06836 31	2.08759 32	51
52	2.01376 30	2.03164 31	2.04994 30	2.06867 32	2.08791 33	52
53	2.01406 29	2.03195 30	2.05024 31	2.06899 32	2.08824 32	53
54	2.01435 29	2.03225 30	2.05055 31	2.06931 31	2.08856 33	54
55	2.01465 30	2.03255 30	2.05086 31	2.06962 32	2.08889 33	55
56	2.01495 29	2.03285 31	2.05117 31	2.06994 32	2.08922 32	56
57	2.01524 29	2.03316 30	2.05148 31	2.07026 32	2.08954 33	57
58	2.01554 30	2.03346 30	2.05178 30	2.07058 32	2.08987 32	58
59	2.01583 30	2.03376 30	2.05209 31	2.07089 31	2.09019 33	59
60	2.01613 30	2.03406 30	2.05240 31	2.07121 32	2.09052 33	60

	65°	66°	67°	68°	69°	
0	2.09052	2.11039	2.13086	2.15201	2.17391	0
1	2.09085	2.11073	2.13121	2.15237	2.17428	1
2	2.09117	2.11106	2.13155	2.15273	2.17465	2
3	2.09150	2.11140	2.13190	2.15309	2.17503	3
4	2.09183	2.11173	2.13224	2.15344	2.17540	4
5	2.09215	2.11207	2.13259	2.15380	2.17577	5
6	2.09248	2.11241	2.13294	2.15416	2.17615	6
7	2.09281	2.11274	2.13328	2.15452	2.17652	7
8	2.09313	2.11308	2.13363	2.15488	2.17689	8
9	2.09346	2.11341	2.13398	2.15524	2.17727	9
10	2.09379	2.11375	2.13433	2.15560	2.17764	10
11	2.09412	2.11409	2.13468	2.15596	2.17801	11
12	2.09445	2.11443	2.13503	2.15632	2.17839	12
13	2.09478	2.11477	2.13538	2.15669	2.17876	13
14	2.09510	2.11510	2.13573	2.15705	2.17914	14
15	2.09543	2.11544	2.13608	2.15741	2.17951	15
16	2.09576	2.11578	2.13643	2.15777	2.17989	16
17	2.09609	2.11612	2.13678	2.15813	2.18026	17
18	2.09642	2.11646	2.13713	2.15850	2.18064	18
19	2.09675	2.11680	2.13748	2.15886	2.18101	19
20	2.09708	2.11714	2.13783	2.15922	2.18139	20
21	2.09741	2.11748	2.13818	2.15958	2.18177	21
22	2.09774	2.11782	2.13853	2.15995	2.18214	22
23	2.09807	2.11816	2.13888	2.16031	2.18252	23
24	2.09840	2.11850	2.13923	2.16068	2.18290	24
25	2.09873	2.11884	2.13959	2.16104	2.18328	25
26	2.09906	2.11918	2.13994	2.16140	2.18365	26
27	2.09939	2.11952	2.14029	2.16177	2.18403	27
28	2.09972	2.11986	2.14064	2.16213	2.18441	28
29	2.10005	2.12020	2.14099	2.16250	2.18479	29
30	2.10038	2.12054	2.14134	2.16286	2.18517	30
31	2.10071	2.12088	2.14169	2.16323	2.18555	31
32	2.10104	2.12122	2.14205	2.16359	2.18593	32
33	2.10137	2.12157	2.14241	2.16396	2.18631	33
34	2.10171	2.12191	2.14276	2.16432	2.18669	34
35	2.10204	2.12225	2.14311	2.16469	2.18707	35
36	2.10237	2.12259	2.14346	2.16506	2.18745	36
37	2.10270	2.12293	2.14382	2.16542	2.18783	37
38	2.10304	2.12328	2.14417	2.16579	2.18821	38
39	2.10337	2.12362	2.14453	2.16615	2.18859	39
40	2.10370	2.12396	2.14488	2.16652	2.18897	40
41	2.10403	2.12430	2.14523	2.16689	2.18935	41
42	2.10437	2.12465	2.14559	2.16726	2.18973	42
43	2.10470	2.12499	2.14594	2.16762	2.19012	43
44	2.10504	2.12534	2.14630	2.16799	2.19050	44
45	2.10537	2.12568	2.14665	2.16836	2.19088	45
46	2.10570	2.12602	2.14701	2.16873	2.19126	46
47	2.10604	2.12637	2.14736	2.16909	2.19165	47
48	2.10637	2.12671	2.14772	2.16946	2.19203	48
49	2.10671	2.12706	2.14807	2.16983	2.19241	49
50	2.10704	2.12740	2.14843	2.17020	2.19280	50
51	2.10737	2.12775	2.14879	2.17057	2.19318	51
52	2.10771	2.12809	2.14914	2.17094	2.19357	52
53	2.10804	2.12844	2.14950	2.17131	2.19395	53
54	2.10838	2.12878	2.14986	2.17168	2.19434	54
55	2.10871	2.12913	2.15021	2.17205	2.19472	55
56	2.10905	2.12947	2.15057	2.17242	2.19511	56
57	2.10938	2.12982	2.15093	2.17280	2.19549	57
58	2.10972	2.13017	2.15129	2.17317	2.19588	58
59	2.11005	2.13051	2.15165	2.17354	2.19626	59
60	2.11039	2.13086	2.15201	2.17391	2.19665	60

	70°	71°	72°	73°	74°	
0	2.19665 39	2.22029 40	2.24497 42	2.27081 44	2.29793 47	0
1	2.19704 38	2.22069 41	2.24539 42	2.27125 44	2.29840 46	1
2	2.19742 38	2.22110 40	2.24581 42	2.27170 45	2.29886 46	2
3	2.19781 39	2.22150 40	2.24624 43	2.27214 44	2.29933 47	3
4	2.19820 38	2.22191 41	2.24666 42	2.27258 44	2.29979 46	4
5	2.19858 39	2.22231 40	2.24708 42	2.27302 44	2.30026 47	5
6	2.19897 39	2.22271 41	2.24750 42	2.27347 45	2.30073 47	6
7	2.19936 38	2.22312 41	2.24793 43	2.27391 44	2.30119 47	7
8	2.19974 39	2.22352 41	2.24835 42	2.27435 45	2.30166 46	8
9	2.20013 39	2.22393 40	2.24877 42	2.27480 45	2.29979 47	9
10	2.20052 39	2.22433 41	2.24919 42	2.27524 44	2.30239 47	10
11	2.20091 39	2.22474 40	2.24962 43	2.27569 44	2.30306 47	11
12	2.20130 39	2.22514 41	2.25004 42	2.27613 45	2.30353 47	12
13	2.20169 39	2.22555 40	2.25047 43	2.27658 45	2.30400 47	13
14	2.20208 38	2.22595 41	2.25089 42	2.27702 44	2.30447 47	14
15	2.20246 39	2.22636 41	2.25132 43	2.27747 45	2.30494 47	15
16	2.20285 39	2.22677 40	2.25175 43	2.27792 45	2.30541 47	16
17	2.20324 39	2.22717 41	2.25217 42	2.27836 44	2.30588 47	17
18	2.20363 39	2.22758 40	2.25260 43	2.27881 44	2.30635 47	18
19	2.20402 39	2.22798 41	2.25302 42	2.27925 45	2.30682 47	19
20	2.20441 39	2.22839 41	2.25345 43	2.27970 45	2.30729 47	20
21	2.20480 40	2.22880 41	2.25388 43	2.28015 45	2.30776 48	21
22	2.20520 39	2.22921 41	2.25431 43	2.28060 45	2.30824 47	22
23	2.20559 39	2.22962 41	2.25474 43	2.28105 45	2.30871 48	23
24	2.20598 39	2.23003 41	2.25517 43	2.28150 45	2.30919 47	24
25	2.20638 40	2.23044 41	2.25559 42	2.28195 45	2.30966 47	25
26	2.20677 39	2.23085 41	2.25602 43	2.28240 45	2.31013 48	26
27	2.20716 40	2.23126 41	2.25645 43	2.28285 45	2.31061 47	27
28	2.20756 39	2.23167 41	2.25688 43	2.28330 45	2.31108 48	28
29	2.20795 39	2.23208 41	2.25731 43	2.28375 45	2.31156 47	29
30	2.20834 39	2.23249 41	2.25774 43	2.28420 45	2.31203 48	30
31	2.20874 40	2.23290 41	2.25817 43	2.28465 46	2.31251 48	31
32	2.20913 39	2.23331 41	2.25860 43	2.28511 45	2.31299 48	32
33	2.20953 40	2.23373 42	2.25904 44	2.28556 45	2.31347 48	33
34	2.20992 39	2.23414 41	2.25947 43	2.28602 46	2.31395 47	34
35	2.21032 40	2.23455 41	2.25990 43	2.28647 45	2.31442 48	35
36	2.21072 40	2.23497 42	2.26033 43	2.28692 46	2.31490 48	36
37	2.21111 39	2.23538 41	2.26077 44	2.28738 46	2.31538 48	37
38	2.21151 40	2.23580 42	2.26120 43	2.28783 45	2.31586 48	38
39	2.21190 39	2.23621 41	2.26163 43	2.28829 45	2.31634 48	39
40	2.21230 40	2.23662 41	2.26206 43	2.28874 46	2.31682 48	40
41	2.21270 40	2.23704 42	2.26250 44	2.28920 46	2.31730 49	41
42	2.21310 40	2.23745 41	2.26293 43	2.28966 45	2.31779 48	42
43	2.21349 39	2.23787 42	2.26337 44	2.29011 46	2.31827 48	43
44	2.21389 40	9.23828 41	2.26380 43	2.29057 46	2.31875 49	44
45	2.21429 40	2.23870 42	2.26424 44	2.29103 46	2.31924 49	45
46	2.21469 39	2.23912 42	2.26468 44	2.29149 45	2.31972 48	46
47	2.21508 40	2.23953 41	2.26511 43	2.29194 46	2.32020 48	47
48	2.21548 40	2.23995 42	2.26555 44	2.29240 46	2.32068 48	48
49	2.21588 40	2.24036 41	2.26598 43	2.29286 46	2.32117 48	49
50	2.21628 40	2.24078 42	2.26642 44	2.29332 46	2.32165 49	50
51	2.21668 40	2.24120 42	2.26686 44	2.29378 46	2.32214 49	51
52	2.21708 40	2.24162 42	2.26730 44	2.29424 46	2.32263 48	52
53	2.21748 40	2.24204 42	2.26774 44	2.29470 46	2.32311 49	53
54	2.21788 40	2.24246 42	2.26818 44	2.29516 46	2.32360 49	54
55	2.21828 40	2.24287 41	2.26861 43	2.29562 47	2.32408 48	55
56	2.21869 40	2.24329 42	2.26905 44	2.29609 46	2.32457 49	56
57	2.21909 40	2.24371 42	2.26949 44	2.29655 46	2.32505 49	57
58	2.21949 40	2.24413 42	2.26993 44	2.29701 46	2.32553 48	58
59	2.21989 40	2.24455 42	2.27037 44	2.29747 46	2.32603 48	59
60	2.22029 40	2.24497 42	2.27081 44	2.29793 46	2.32652 49	60

	75 °	76 °	77 °	78 °	79 °	
0	2.32652	2.35678	2.38893	2.42325	2.46011	0
1	2.32701	2.35730	2.38948	2.42384	2.46075	1
2	2.32750	2.35782	2.39004	2.42444	2.46139	2
3	2.32800	2.35835	2.39059	2.42503	2.46203	3
4	2.32849	2.35887	2.39115	2.42562	2.46267	4
5	2.32898	2.35939	2.39170	2.42622	2.46332	5
6	2.32947	2.35991	2.39226	2.42682	2.46396	6
7	2.32997	2.36043	2.39281	2.42741	2.46460	7
8	2.33046	2.36096	2.39337	2.42801	2.46525	8
9	2.33095	2.36148	2.39392	2.42861	2.46589	9
10	2.33144	2.36200	2.39448	2.42921	2.46653	10
11	2.33194	2.36253	2.39504	2.42981	2.46718	11
12	2.33243	2.36305	2.39560	2.43041	2.46782	12
13	2.33293	2.36358	2.39616	2.43102	2.46847	13
14	2.33343	2.36411	2.39673	2.43162	2.46912	14
15	2.33392	2.36463	2.39729	2.43222	2.46977	15
16	2.33442	2.36516	2.39785	2.43282	2.47042	16
17	2.33492	2.36569	2.39841	2.43343	2.47108	17
18	2.33542	2.36621	2.39898	2.43403	2.47173	18
19	2.33591	2.36674	2.39954	2.43464	2.47238	19
20	2.33641	2.36727	2.40010	2.43524	2.47303	20
21	2.33691	2.36780	2.40067	2.43585	2.47369	21
22	2.33741	2.36833	2.40124	2.43646	2.47434	22
23	2.33791	2.36887	2.40181	2.43707	2.47500	23
24	2.33841	2.36940	2.40238	2.43768	2.47566	24
25	2.33891	2.36993	2.40295	2.43829	2.47631	25
26	2.33942	2.37047	2.40352	2.43890	2.47697	26
27	2.33992	2.37100	2.40409	2.43951	2.47763	27
28	2.34042	2.37153	2.40466	2.44013	2.47828	28
29	2.34092	2.37206	2.40523	2.44074	2.47894	29
30	2.34142	2.37260	2.40580	2.44135	2.47960	30
31	2.34193	2.37313	2.40638	2.44196	2.48027	31
32	2.34243	2.37367	2.40695	2.44258	2.48093	32
33	2.34294	2.37421	2.40753	2.44319	2.48160	33
34	2.34345	2.37475	2.40810	2.44381	2.48227	34
35	2.34395	2.37528	2.40868	2.44442	2.48293	35
36	2.34446	2.37582	2.40925	2.44504	2.48360	36
37	2.34497	2.37636	2.40983	2.44566	2.48427	37
38	2.34547	2.37690	2.41040	2.44628	2.48494	38
39	2.34598	2.37744	2.41098	2.44690	2.48561	39
40	2.34649	2.37798	2.41155	2.44752	2.48628	40
41	2.34700	2.37852	2.41213	2.44814	2.48696	41
42	2.34751	2.37907	2.41271	2.44867	2.48763	42
43	2.34803	2.37961	2.41329	2.44930	2.48831	43
44	2.34854	2.38015	2.41387	2.45002	2.48898	44
45	2.34905	2.38070	2.41445	2.45064	2.48966	45
46	2.34956	2.38124	2.41503	2.45127	2.49034	46
47	2.35007	2.38179	2.41562	2.45189	2.49101	47
48	2.35059	2.38233	2.41620	2.45252	2.49169	48
49	2.35110	2.38288	2.41678	2.45314	2.49237	49
50	2.35161	2.38343	2.41736	2.45377	2.49305	50
51	2.35213	2.38398	2.41795	2.45440	2.49373	51
52	2.35264	2.38453	2.41854	2.45503	2.49442	52
53	2.35316	2.38508	2.41912	2.45566	2.49510	53
54	2.35367	2.38563	2.41971	2.45630	2.49579	54
55	2.35419	2.38618	2.42030	2.45693	2.49647	55
56	2.35471	2.38673	2.42089	2.45757	2.49716	56
57	2.35523	2.38728	2.42148	2.45820	2.49785	57
58	2.35574	2.38783	2.42207	2.45884	2.49853	58
59	2.35626	2.38838	2.42266	2.45947	2.49922	59
60	2.35678	2.38893	2.42325	2.46011	2.49991	60

	80 °	81 °	82 °	83 °	84 °	
0	2.49991	2.54317	2.59065	2.64315	2.70184	0
1	2.50060	2.54392	2.59148	2.64408	2.70288	1
2	2.50129	2.54468	2.59232	2.64500	2.70392	2
3	2.50199	2.54543	2.59315	2.64593	2.70496	3
4	2.50268	2.54619	2.59398	2.64686	2.70601	4
5	2.50337	2.54695	2.59482	2.64779	2.70705	5
6	2.50407	2.54771	2.59566	2.64872	2.70810	6
7	2.50476	2.54848	2.59650	2.64966	2.70915	7
8	2.50546	2.54924	2.59734	2.65059	2.71020	8
9	2.50616	2.55000	2.59819	2.65153	2.71125	9
10	2.50686	2.55077	2.59903	2.65247	2.71230	10
11	2.50756	2.55154	2.59988	2.65342	2.71336	11
12	2.50826	2.55230	2.60072	2.65436	2.71442	12
13	2.50897	2.55307	2.60157	2.65531	2.71548	13
14	2.50967	2.55384	2.60242	2.65626	2.71655	14
15	2.51037	2.55461	2.60327	2.65721	2.71761	15
16	2.51108	2.55539	2.60412	2.65816	2.71868	16
17	2.51179	2.55616	2.60498	2.65912	2.71976	17
18	2.51249	2.55694	2.60583	2.66007	2.72083	18
19	2.51320	2.55771	2.60669	2.66103	2.72191	19
20	2.51391	2.55849	2.60754	2.66199	2.72299	20
21	2.51462	2.55927	2.60840	2.66295	2.72407	21
22	2.51534	2.56005	2.60926	2.66391	2.72516	22
23	2.51605	2.56083	2.61013	2.66487	2.72624	23
24	2.51676	2.56161	2.61099	2.66584	2.72733	24
25	2.51748	2.56239	2.61186	2.66680	2.72842	25
26	2.51820	2.56318	2.61273	2.66777	2.72952	26
27	2.51891	2.56396	2.61360	2.66874	2.73061	27
28	2.51963	2.56475	2.61447	2.66971	2.73171	28
29	2.52035	2.56554	2.61534	2.67069	2.73281	29
30	2.52107	2.56633	2.61621	2.67166	2.73391	30
31	2.52179	2.56712	2.61709	2.67264	2.73502	31
32	2.52252	2.56791	2.61796	2.67362	2.73613	32
33	2.52324	2.56870	2.61884	2.67460	2.73724	33
34	2.52396	2.56950	2.61972	2.67559	2.73835	34
35	2.52469	2.57029	2.62060	2.67657	2.73946	35
36	2.52542	2.57109	2.62148	2.67756	2.74058	36
37	2.52615	2.57189	2.62237	2.67855	2.74171	37
38	2.52688	2.57269	2.62325	2.67954	2.74283	38
39	2.52761	2.57350	2.62414	2.68054	2.74396	39
40	2.52834	2.57430	2.62503	2.68153	2.74509	40
41	2.52907	2.57510	2.62592	2.68253	2.74622	41
42	2.52980	2.57591	2.62682	2.68352	2.74736	42
43	2.53054	2.57671	2.62771	2.68452	2.74849	43
44	2.53127	2.57752	2.62860	2.68552	2.74963	44
45	2.53200	2.57833	2.62950	2.68653	2.75077	45
46	2.53274	2.57914	2.63039	2.68753	2.75192	46
47	2.53348	2.57996	2.63129	2.68854	2.75306	47
48	2.53422	2.58077	2.63219	2.68955	2.75421	48
49	2.53496	2.58159	2.63309	2.69056	2.75536	49
50	2.53570	2.58240	2.63400	2.69158	2.75652	50
51	2.53644	2.58322	2.63490	2.69259	2.75768	51
52	2.53719	2.58404	2.63581	2.69361	2.75885	52
53	2.53793	2.58486	2.63672	2.69463	2.76001	53
54	2.53867	2.58569	2.63763	2.69565	2.76118	54
55	2.53942	2.58651	2.63855	2.69668	2.76235	55
56	2.54017	2.58734	2.63946	2.69771	2.76353	56
57	2.54092	2.58816	2.64038	2.69874	2.76470	57
58	2.54167	2.58899	2.64130	2.69977	2.76588	58
59	2.54242	2.58982	2.64222	2.70081	2.76706	59
60	2.54317	2.59065	2.64315	2.70184	2.76825	60

	85 ° *)	86 °	87 °	88 °	89 °	
0	2.76687	2.84444	2.93174	3.03686	3.16573	0
1	2.76820	2.84575	2.93337	3.03876	3.16814	1
2	2.76952	2.84707	2.93501	3.04067	3.17056	2
3	2.77085	2.84839	2.93665	3.04259	3.17299	3
4	2.77217	2.84972	2.93829	3.04451	3.17543	4
5	2.77349	2.85104	2.93994	3.04644	3.17787	5
6	2.77481	2.85237	2.94160	3.04838	3.18032	6
7	2.77612	2.85371	2.94326	3.05032	3.18278	7
8	2.77744	2.85505	2.94492	3.05227	3.18525	8
9	2.77875	2.85639	2.94659	3.05423	3.18773	9
10	2.78006	2.85774	2.94827	3.05620	3.19022	10
11	2.78137	2.85909	2.94995	3.05818	3.19271	11
12	2.78268	2.86044	2.95163	3.06016	3.19521	12
13	2.78399	2.86180	2.95332	3.06215	3.19772	13
14	2.78529	2.86316	2.95502	3.06415	3.20023	14
15	2.78659	2.86452	2.95672	3.06615	3.20275	15
16	2.78789	2.86589	2.95843	3.06816	3.20528	16
17	2.78918	2.86726	2.96014	3.07018	3.20781	17
18	2.79048	2.86863	2.96185	3.07221	3.21035	18
19	2.79177	2.87001	2.96357	3.07425	3.21290	19
20	2.79306	2.87140	2.96529	3.07629	3.21546	20
21	2.79435	2.87279	2.96702	3.07834	3.21802	21
22	2.79564	2.87419	2.96875	3.08041	3.22059	22
23	2.79693	2.87559	2.97048	3.08248	3.22317	23
24	2.79821	2.87700	2.97221	3.08456	3.22576	24
25	2.79950	2.87841	2.97395	3.08665	3.22835	25
26	2.80078	2.87983	2.97569	3.08875	3.23095	26
27	2.80206	2.88125	2.97744	3.09085	3.23356	27
28	2.80334	2.88268	2.97919	3.09297	3.23617	28
29	2.80462	2.88411	2.98094	3.09510	3.23879	29
30	2.80590	2.88555	2.98269	3.09724	3.24142	30
31	2.80717	2.88701	2.98443	3.09939	3.24406	31
32	2.80845	2.88847	2.98617	3.10155	3.24670	32
33	2.80972	2.88994	2.98792	3.10372	3.24935	33
34	2.81100	2.89141	2.98967	3.10591	3.25201	34
35	2.81227	2.89289	2.99143	3.10810	3.25468	35
36	2.81355	2.89438	2.99319	3.11030	3.25735	36
37	2.81483	2.89587	2.99495	3.11251	3.26003	37
38	2.81610	2.89737	2.99672	3.11473	3.26272	38
39	2.81738	2.89888	2.99849	3.11696	3.26541	39
40	2.81865	2.90039	3.00026	3.11920	3.26811	40
41	2.81993	2.90191	3.00204	3.12145	3.27082	41
42	2.82121	2.90343	3.00382	3.12370	3.27354	42
43	2.82249	2.90496	3.00561	3.12596	3.27626	43
44	2.82376	2.90649	3.00740	3.12824	3.27899	44
45	2.82504	2.90803	3.00919	3.13052	3.28173	45
46	2.82632	2.90957	3.01099	3.13281	3.28448	46
47	2.82760	2.91112	3.01280	3.13511	3.28723	47
48	2.82888	2.91267	3.01462	3.13741	3.28999	48
49	2.83017	2.91423	3.01644	3.13972	3.29276	49
50	2.83146	2.91579	3.01827	3.14205	3.29553	50
51	2.83275	2.91736	3.02010	3.14438	3.29831	51
52	2.83404	2.91894	3.02194	3.14672	3.30110	52
53	2.83533	2.92052	3.02378	3.14907	3.30390	53
54	2.83662	2.92211	3.02563	3.15142	3.30670	54
55	2.83792	2.92370	3.02749	3.15378	3.30951	55
56	2.83922	2.92530	3.02935	3.15615	3.31233	56
57	2.84052	2.92690	3.03122	3.15853	3.31516	57
58	2.84183	2.92851	3.03309	3.16092	3.31799	58
59	2.84313	2.93012	3.03497	3.16332	3.32083	59
60	2.84444	2.93174	3.03686	3.16573	3.32368	60

*) Von hier an sind die Werthe nach Beobachtungen von Argelander abgeleitet.

z.	A.	λ	z.	A.	λ
45°	—	1.0018	80° 0'	1.0041	1.0420
46	—	1.0019	10	1.0042	1.0431
47	—	1.0019	20	1.0043	1.0442
48	—	1.0020	30	1.0045	1.0454
49	—	1.0021	40	1.0046	1.0466
50	—	1.0023	50	1.0047	1.0479
51	—	1.0025	81 0	1.0049	1.0493
52	—	1.0026	10	1.0050	1.0508
53	—	1.0027	20	1.0052	1.0523
54	—	1.0029	30	1.0054	1.0540
55	—	1.0031	40	1.0056	1.0559
56	—	1.0034	50	1.0058	1.0579
57	—	1.0037	82 0	1.0060	1.0600
58	—	1.0040	10	1.0062	1.0622
59	—	1.0043	20	1.0065	1.0646
60	—	1.0046	30	1.0067	1.0671
61	—	1.0049	40	1.0070	1.0697
62	—	1.0054	50	1.0073	1.0725
63	—	1.0058	83 0	1.0075	1.0754
64	—	1.0063	10	1.0078	1.0784
65	—	1.0068	20	1.0081	1.0815
66	—	1.0075	30	1.0084	1.0846
67	—	1.0083	40	1.0088	1.0879
68	—	1.0092	50	1.0092	1.0914
69	—	1.0101	84 0	1.0096	1.0951
70	—	1.0111	10	1.0100	1.0992
71	—	1.0124	20	1.0105	1.1036
72	—	1.0139	30	1.0110	1.1082
73	—	1.0156	40	1.0115	1.1130
74	—	1.0175	50	1.0121	1.1178
75 0'	—	1.0197	85 0	1.0127	1.1229
10	—	1.0200	10	1.0133	1.1285
20	—	1.0204	20	1.0140	1.1344
30	—	1.0208	30	1.0147	1.1408
40	—	1.0212	40	1.0155	1.1475
50	—	1.0216	50	1.0163	1.1547
76 0	—	1.0220	86 0	1.0172	1.1624
10	—	1.0225	10	1.0182	1.1706
20	—	1.0230	20	1.0193	1.1794
30	—	1.0235	30	1.0204	1.1888
40	—	1.0241	40	1.0216	1.1989
50	—	1.0246	50	1.0230	1.2098
77 0	1.0026	1.0252	87 0	1.0244	1.2215
10	1.0026	1.0258	10	1.0260	1.2341
20	1.0027	1.0264	20	1.0278	1.2477
30	1.0027	1.0272	30	1.0298	1.2624
40	1.0028	1.0281	40	1.0320	1.2783
50	1.0029	1.0290	50	1.0343	1.2955
78 0	1.0030	1.0299	88 0	1.0368	1.3141
10	1.0030	1.0308	10	1.0397	1.3341
20	1.0031	1.0318	20	1.0428	1.3559
30	1.0032	1.0328	30	1.0465	1.3797
40	1.0033	1.0338	40	1.0504	1.4056
50	1.0034	1.0347	50	1.0547	1.4341
79 0	1.0035	1.0357	89 0	1.0593	1.4653
10	1.0036	1.0367	10	1.0649	1.4996
20	1.0037	1.0377	20	1.0711	1.5373
30	1.0038	1.0387	30	1.0780	1.5789
40	1.0039	1.0398	40	1.0857	1.6246
50	1.0040	1.0409	50	1.0942	1.6750
60	1.0041	1.0420	60	1.1034	1.7304

Grade F.	log. T.	Grade	Réaumur log. T.	Centes log. T.
— 30°	+ 0.00242	— 25°	+ 0.00220	+ 0.00176
— 28	+ 0.00234	— 24	+ 0.00211	+ 0.00169
— 26	+ 0.00226	— 23	+ 0.00202	+ 0.00162
— 24	+ 0.00219	— 22	+ 0.00194	+ 0.00154
— 22	+ 0.00211	— 21	+ 0.00185	+ 0.00147
— 20	+ 0.00203	— 20	+ 0.00176	+ 0.00140
— 18	+ 0.00195	— 19	+ 0.00167	+ 0.00133
— 16	+ 0.00187	— 18	+ 0.00158	+ 0.00126
— 14	+ 0.00180	— 17	+ 0.00150	+ 0.00119
— 12	+ 0.00172	— 16	+ 0.00141	+ 0.00112
— 10	+ 0.00164	— 15	+ 0.00132	+ 0.00105
— 8	+ 0.00156	— 14	+ 0.00123	+ 0.00098
— 6	+ 0.00148	— 13	+ 0.00114	+ 0.00091
— 4	+ 0.00141	— 12	+ 0.00106	+ 0.00084
— 2	+ 0.00133	— 11	+ 0.00097	+ 0.00077
0	+ 0.00125	— 10	+ 0.00088	+ 0.00070
+ 2	+ 0.00117	— 9	+ 0.00079	+ 0.00063
+ 4	+ 0.00109	— 8	+ 0.00070	+ 0.00056
+ 6	+ 0.00102	— 7	+ 0.00062	+ 0.00049
+ 8	+ 0.00094	— 6	+ 0.00053	+ 0.00042
+ 10	+ 0.00086	— 5	+ 0.00044	+ 0.00035
+ 12	+ 0.00078	— 4	+ 0.00035	+ 0.00028
+ 14	+ 0.00070	— 3	+ 0.00026	+ 0.00021
+ 16	+ 0.00063	— 2	+ 0.00018	+ 0.00014
+ 18	+ 0.00055	— 1	+ 0.00009	+ 0.00007
+ 20	+ 0.00047	0	0.00000	0.00000
+ 22	+ 0.00039	+ 1	— 0.00009	— 0.00007
+ 24	+ 0.00031	+ 2	— 0.00018	— 0.00014
+ 26	+ 0.00024	+ 3	— 0.00026	— 0.00021
+ 28	+ 0.00016	+ 4	— 0.00035	— 0.00028
+ 30	+ 0.00008	+ 5	— 0.00044	— 0.00035
+ 32	0.00000	+ 6	— 0.00053	— 0.00042
+ 34	— 0.00008	+ 7	— 0.00062	— 0.00049
+ 36	— 0.00015	+ 8	— 0.00070	— 0.00056
+ 38	— 0.00023	+ 9	— 0.00079	— 0.00063
+ 40	— 0.00031	+ 10	— 0.00088	— 0.00070
+ 42	— 0.00039	+ 11	— 0.00097	— 0.00077
+ 44	— 0.00047	+ 12	— 0.00105	— 0.00084
+ 46	— 0.00054	+ 13	— 0.00114	— 0.00091
+ 48	— 0.00062	+ 14	— 0.00122	— 0.00098
+ 50	— 0.00070	+ 15	— 0.00131	— 0.00105
+ 52	— 0.00078	+ 16	— 0.00140	— 0.00112
+ 54	— 0.00086	+ 17	— 0.00149	— 0.00119
+ 56	— 0.00093	+ 18	— 0.00157	— 0.00126
+ 58	— 0.00101	+ 19	— 0.00166	— 0.00133
+ 60	— 0.00109	+ 20	— 0.00175	— 0.00140
+ 62	— 0.00117	+ 21	— 0.00184	— 0.00147
+ 64	— 0.00125	+ 22	— 0.00192	— 0.00154
+ 66	— 0.00132	+ 23	— 0.00201	— 0.00161
+ 68	— 0.00140	+ 24	— 0.00209	— 0.00168
+ 70	— 0.00148	+ 25	— 0.00218	— 0.00175
+ 72	— 0.00156	+ 26	— 0.00227	— 0.00182
+ 74	— 0.00163	+ 27	— 0.00236	— 0.00189
+ 76	— 0.00171	+ 28	— 0.00244	— 0.00196
+ 78	— 0.00178	+ 29	— 0.00253	— 0.00203
+ 80	— 0.00186	+ 30	— 0.00262	— 0.00210
+ 82	— 0.00194	+ 31	— 0.00271	— 0.00217
+ 84	— 0.00202	+ 32	— 0.00279	— 0.00224
+ 86	— 0.00209	+ 33	— 0.00288	— 0.00230
+ 88	— 0.00217	+ 34	— 0.00296	— 0.00237
+ 90	— 0.00225	+ 35	— 0.00305	— 0.00244

Pariser Linien	Par. Zoll u. Lin.	log. B.	Par. Linien	Par. Zoll u. Lin.	log. B.	Par. Linien	Par. Zoll u. Lin.	log. B.
315.0	26 3.0	— 0.02445	321.0	26 9.0	— 0.01625	327.0	27 3.0	— 0.00821
315.1	3.1	0.02431	321.1	9.1	0.01611	327.1	3.1	0.00808
315.2	3.2	0.02417	321.2	9.2	0.01598	327.2	3.2	0.00795
315.3	3.3	0.02404	321.3	9.3	0.01584	327.3	3.3	0.00781
315.4	3.4	0.02390	321.4	9.4	0.01571	327.4	3.4	0.00768
315.5	3.5	0.02376	321.5	9.5	0.01557	327.5	3.5	0.00755
315.6	3.6	0.02362	321.6	9.6	0.01544	327.6	3.6	0.00742
315.7	3.7	0.02348	321.7	9.7	0.01530	327.7	3.7	0.00729
315.8	3.8	0.02335	321.8	9.8	0.01517	327.8	3.8	0.00715
315.9	3.9	0.02321	321.9	9.9	0.01503	327.9	3.9	0.00702
316.0	26 4.0	0.02307	322.0	26 10.0	0.01490	328.0	27 4.0	0.00689
316.1	4.1	0.02293	322.1	10.1	0.01477	328.1	4.1	0.00676
316.2	4.2	0.02280	322.2	10.2	0.01463	328.2	4.2	0.00662
316.3	4.3	0.02266	322.3	10.3	0.01450	328.3	4.3	0.00649
316.4	4.4	0.02252	322.4	10.4	0.01436	328.4	4.4	0.00636
316.5	4.5	0.02238	322.5	10.5	0.01423	328.5	4.5	0.00622
316.6	4.6	0.02225	322.6	10.6	0.01410	328.6	4.6	0.00609
316.7	4.7	0.02211	322.7	10.7	0.01396	328.7	4.7	0.00596
316.8	4.8	0.02197	322.8	10.8	0.01383	328.8	4.8	0.00583
316.9	4.9	0.02184	322.9	10.9	0.01369	328.9	4.9	0.00569
317.0	26 5.0	0.02170	323.0	26 11.0	0.01356	329.0	27 5.0	0.00556
317.1	5.1	0.02156	323.1	11.1	0.01342	329.1	5.1	0.00543
317.2	5.2	0.02143	323.2	11.2	0.01329	329.2	5.2	0.00530
317.3	5.3	0.02129	323.3	11.3	0.01315	329.3	5.3	0.00517
317.4	5.4	0.02115	323.4	11.4	0.01302	329.4	5.4	0.00504
317.5	5.5	0.02101	323.5	11.5	0.01288	329.5	5.5	0.00490
317.6	5.6	0.02088	323.6	11.6	0.01275	329.6	5.6	0.00477
317.7	5.7	0.02074	323.7	11.7	0.01261	329.7	5.7	0.00464
317.8	5.8	0.02060	323.8	11.8	0.01248	329.8	5.8	0.00451
317.9	5.9	0.02047	323.9	11.9	0.01234	329.9	5.9	0.00438
318.0	26 6.0	0.02033	324.0	27 0.0	0.01221	330.0	27 6.0	0.00425
318.1	6.1	0.02019	324.1	0.1	0.01208	330.1	6.1	0.00412
318.2	6.2	0.02006	324.2	0.2	0.01194	330.2	6.2	0.00399
318.3	6.3	0.01992	324.3	0.3	0.01181	330.3	6.3	0.00385
318.4	6.4	0.01979	324.4	0.4	0.01168	330.4	6.4	0.00372
318.5	6.5	0.01965	324.5	0.5	0.01154	330.5	6.5	0.00359
318.6	6.6	0.01951	324.6	0.6	0.01141	330.6	6.6	0.00346
318.7	6.7	0.01938	324.7	0.7	0.01128	330.7	6.7	0.00333
318.8	6.8	0.01924	324.8	0.8	0.01115	330.8	6.8	0.00319
318.9	6.9	0.01911	324.9	0.9	0.01101	330.9	6.9	0.00306
319.0	26 7.0	0.01897	325.0	27 1.0	0.01088	331.0	27 7.0	0.00293
319.1	7.1	0.01883	325.1	1.1	0.01075	331.1	7.1	0.00280
319.2	7.2	0.01870	325.2	1.2	0.01061	331.2	7.2	0.00267
319.3	7.3	0.01856	325.3	1.3	0.01048	331.3	7.3	0.00254
319.4	7.4	0.01843	325.4	1.4	0.01034	331.4	7.4	0.00241
319.5	7.5	0.01829	325.5	1.5	0.01021	331.5	7.5	0.00227
319.6	7.6	0.01815	325.6	1.6	0.01008	331.6	7.6	0.00214
319.7	7.7	0.01802	325.7	1.7	0.00994	331.7	7.7	0.00201
319.8	7.8	0.01788	325.8	1.8	0.00981	331.8	7.8	0.00188
319.9	7.9	0.01775	325.9	1.9	0.00967	331.9	7.9	0.00175
320.0	26 8.0	0.01761	326.0	27 2.0	0.00954	332.0	27 8.0	0.00162
320.1	8.1	0.01747	326.1	2.1	0.00941	332.1	8.1	0.00149
320.2	8.2	0.01734	326.2	2.2	0.00927	332.2	8.2	0.00136
320.3	8.3	0.01720	326.3	2.3	0.00914	332.3	8.3	0.00123
320.4	8.4	0.01707	326.4	2.4	0.00901	332.4	8.4	0.00110
320.5	8.5	0.01693	326.5	2.5	0.00887	332.5	8.5	0.00097
320.6	8.6	0.01679	326.6	2.6	0.00874	332.6	8.6	0.00084
320.7	8.7	0.01666	326.7	2.7	0.00861	332.7	8.7	0.00071
320.8	8.8	0.01652	326.8	2.8	0.00848	332.8	8.8	0.00058
320.9	8.9	0.01639	326.9	2.9	0.00834	332.9	8.9	0.00045
321.0	9.0	— 0.01625	327.0	27 3.0	— 0.00821	333.0	27 9.0	— 0.00032

Par. Linien	Par. Zoll u. Lin.	log. B.	Par. Linien	Par. Zoll u. Lin.	log. B.	Par. Linien	Par. Zoll u. Lin.	log. B.
333.0	27 9.0	— 0.00032	339.0	28 3.0	+ 0.00744	345.0	28 9.0	+ 0.01506
333.1	9.1	0.00019	339.1	3.1	0.00757	345.1	9.1	0.01519
333.2	9.2	— 0.00006	339.2	3.2	0.00770	345.2	9.2	0.01531
333.3	9.3	+ 0.00007	339.3	3.3	0.00782	345.3	9.3	0.01544
333.4	9.4	0.00020	339.4	3.4	0.00795	345.4	9.4	0.01556
333.5	9.5	0.00034	339.5	3.5	0.00808	345.5	9.5	0.01569
333.6	9.6	0.00047	339.6	3.6	0.00821	345.6	9.6	0.01582
333.7	9.7	0.00060	339.7	3.7	0.00834	345.7	9.7	0.01594
333.8	9.8	0.00073	339.8	3.8	0.00846	345.8	9.8	0.01607
333.9	9.9	0.00086	339.9	3.9	0.00859	345.9	9.9	0.01619
334.0	27 10.0	0.00099	340.0	28 4.0	0.00872	346.0	28 10.0	0.01632
334.1	10.1	0.00112	340.1	4.1	0.00885	346.1	10.1	0.01645
334.2	10.2	0.00125	340.2	4.2	0.00897	346.2	10.2	0.01657
334.3	10.3	0.00138	340.3	4.3	0.00910	346.3	10.3	0.01670
334.4	10.4	0.00151	340.4	4.4	0.00923	346.4	10.4	0.01682
334.5	10.5	0.00164	340.5	4.5	0.00936	346.5	10.5	0.01695
334.6	10.6	0.00176	340.6	4.6	0.00948	346.6	10.6	0.01707
334.7	10.7	0.00189	340.7	4.7	0.00961	346.7	10.7	0.01720
334.8	10.8	0.00202	340.8	4.8	0.00974	346.8	10.8	0.01732
334.9	10.9	0.00215	340.9	4.9	0.00986	346.9	10.9	0.01745
335.0	27 11.0	0.00228	341.0	28 5.0	0.00999	347.0	28 11.0	0.01757
335.1	11.1	0.00241	341.1	5.1	0.01012	347.1	11.1	0.01770
335.2	11.2	0.00254	341.2	5.2	0.01025	347.2	11.2	0.01782
335.3	11.3	0.00267	341.3	5.3	0.01037	347.3	11.3	0.01795
335.4	11.4	0.00280	341.4	5.4	0.01050	347.4	11.4	0.01807
335.5	11.5	0.00293	341.5	5.5	0.01063	347.5	11.5	0.01820
335.6	11.6	0.00306	341.6	5.6	0.01076	347.6	11.6	0.01832
335.7	11.7	0.00319	341.7	5.7	0.01089	347.7	11.7	0.01845
335.8	11.8	0.00332	341.8	5.8	0.01101	347.8	11.8	0.01857
335.9	27 11.9	0.00345	341.9	5.9	0.01114	347.9	28 11.9	0.01870
336.0	28 0.0	0.00358	342.0	28 6.0	0.01127	348.0	29 0.0	0.01882
336.1	0.1	0.00371	342.1	6.1	0.01140	348.1	0.1	0.01895
336.2	0.2	0.00384	342.2	6.2	0.01152	348.2	0.2	0.01907
336.3	0.3	0.00397	342.3	6.3	0.01165	348.3	0.3	0.01920
336.4	0.4	0.00410	342.4	6.4	0.01177	348.4	0.4	0.01932
336.5	0.5	0.00423	342.5	6.5	0.01190	348.5	0.5	0.01945
336.6	0.6	0.00435	342.6	6.6	0.01203	348.6	0.6	0.01957
336.7	0.7	0.00448	342.7	6.7	0.01215	348.7	0.7	0.01970
336.8	0.8	0.00461	342.8	6.8	0.01228	348.8	0.8	0.01982
336.9	0.9	0.00474	342.9	6.9	0.01240	348.9	0.9	0.01995
337.0	28 1.0	0.00487	343.0	28 7.0	0.01253	349.0	29 1.0	0.02007
337.1	1.1	0.00500	343.1	7.1	0.01266	349.1	1.1	0.02019
337.2	1.2	0.00513	343.2	7.2	0.01278	349.2	1.2	0.02032
337.3	1.3	0.00526	343.3	7.3	0.01291	349.3	1.3	0.02044
337.4	1.4	0.00539	343.4	7.4	0.01304	349.4	1.4	0.02057
337.5	1.5	0.00552	343.5	7.5	0.01317	349.5	1.5	0.02069
337.6	1.6	0.00564	343.6	7.6	0.01329	349.6	1.6	0.02081
337.7	1.7	0.00577	343.7	7.7	0.01342	349.7	1.7	0.02094
337.8	1.8	0.00590	343.8	7.8	0.01355	349.8	1.8	0.02106
337.9	1.9	0.00603	343.9	7.9	0.01367	349.9	1.9	0.02119
338.0	28 2.0	0.00616	344.0	28 8.0	0.01380	350.0	29 2.0	0.02131
338.1	2.1	0.00629	344.1	8.1	0.01393	350.1	2.1	0.02143
338.2	2.2	0.00642	344.2	8.2	0.01405	350.2	2.2	0.02156
338.3	2.3	0.00654	344.3	8.3	0.01418	350.3	2.3	0.02168
338.4	2.4	0.00667	344.4	8.4	0.01430	350.4	2.4	0.02181
338.5	2.5	0.00680	344.5	8.5	0.01443	350.5	2.5	0.02193
338.6	2.6	0.00693	344.6	8.6	0.01456	350.6	2.6	0.02205
338.7	2.7	0.00706	344.7	8.7	0.01468	350.7	2.7	0.02218
338.8	2.8	0.00718	344.8	8.8	0.01481	350.8	2.8	0.02230
338.9	2.9	0.00731	344.9	8.9	0.01494	350.9	2.9	0.02243
339.0	28 3.0	+ 0.00744	345.0	28 9.0	+ 0.01506	351.0	29 3.0	+ 0.02255

Engl. Zoll	log. B.	Engl. Zoll	log. B.	Engl. Zoll	log. B.
27.50	— 0.03191	28.10	— 0.02254	28.70	— 0.01336
27.51	0.03175	28.11	0.02238	28.71	0.01321
27.52	0.03159	28.12	0.02223	28.72	0.01306
27.53	0.03144	28.13	0.02207	28.73	0.01291
27.54	0.03128	28.14	0.02192	28.74	0.01276
27.55	0.03112	28.15	0.02176	28.75	0.01260
27.56	0.03096	28.16	0.02161	28.76	0.01245
27.57	0.03080	28.17	0.02145	28.77	0.01230
27.58	0.03065	28.18	0.02130	28.78	0.01215
27.59	0.03049	28.19	0.02114	28.79	0.01200
27.60	0.03033	28.20	0.02099	28.80	0.01185
27.61	0.03017	28.21	0.02084	28.81	0.01170
27.62	0.03002	28.22	0.02068	28.82	0.01155
27.63	0.02986	28.23	0.02053	28.83	0.01140
27.64	0.02970	28.24	0.02038	28.84	0.01125
27.65	0.02954	28.25	0.02022	28.85	0.01110
27.66	0.02939	28.26	0.02007	28.86	0.01095
27.67	0.02923	28.27	0.01992	28.87	0.01080
27.68	0.02907	28.28	0.01977	28.88	0.01065
27.69	0.02892	28.29	0.01961	28.89	0.01050
27.70	0.02876	28.30	0.01946	28.90	0.01035
27.71	0.02860	28.31	0.01931	28.91	0.01020
27.72	0.02845	28.32	0.01915	28.92	0.01005
27.73	0.02829	28.33	0.01900	28.93	0.00990
27.74	0.02814	28.34	0.01885	28.94	0.00975
27.75	0.02798	28.35	0.01869	28.95	0.00960
27.76	0.02782	28.36	0.01854	28.96	0.00945
27.77	0.02767	28.37	0.01839	28.97	0.00930
27.78	0.02751	28.38	0.01824	28.98	0.00915
27.79	0.02736	28.39	0.01808	28.99	0.00900
27.80	0.02720	28.40	0.01793	29.00	0.00885
27.81	0.02704	28.41	0.01778	29.01	0.00870
27.82	0.02689	28.42	0.01762	29.02	0.00855
27.83	0.02673	28.43	0.01747	29.03	0.00840
27.84	0.02658	28.44	0.01732	29.04	0.00825
27.85	0.02642	28.45	0.01716	29.05	0.00810
27.86	0.02626	28.46	0.01701	29.06	0.00795
27.87	0.02611	28.47	0.01686	29.07	0.00780
27.88	0.02595	28.48	0.01671	29.08	0.00765
27.89	0.02580	28.49	0.01655	29.09	0.00750
27.90	0.02564	28.50	0.01640	29.10	0.00735
27.91	0.02548	28.51	0.01625	29.11	0.00720
27.92	0.02533	28.52	0.01610	29.12	0.00705
27.93	0.02517	28.53	0.01594	29.13	0.00690
27.94	0.02502	28.54	0.01579	29.14	0.00675
27.95	0.02486	28.55	0.01564	29.15	0.00660
27.96	0.02471	28.56	0.01549	29.16	0.00646
27.97	0.02455	28.57	0.01534	29.17	0.00631
27.98	0.02440	28.58	0.01518	29.18	0.00616
27.99	0.02424	28.59	0.01503	29.19	0.00601
28.00	0.02409	28.60	0.01488	29.20	0.00586
28.01	0.02393	28.61	0.01473	29.21	0.00571
28.02	0.02378	28.62	0.01458	29.22	0.00556
28.03	0.02362	28.63	0.01442	29.23	0.00542
28.04	0.02347	28.64	0.01427	29.24	0.00527
28.05	0.02332	28.65	0.01412	29.25	0.00512
28.06	0.02317	28.66	0.01397	29.26	0.00497
28.07	0.02301	28.67	0.01382	29.27	0.00482
28.08	0.02286	28.68	0.01366	29.28	0.00468
28.09	0.02270	28.69	0.01351	29.29	0.00453
28.10	— 0.02254	28.70	— 0.01336	29.30	— 0.00438

Engl. Zoll	log. B.	Engl. Zoll	log. B.	Engl. Zoll	log. B.
29.30	— 0.00438	29.90	+ 0.00443	30.50	+ 0.01306
29.31	0.00423	29.91	0.00458	30.51	0.01320
29.32	0.00408	29.92	0.00472	30.52	0.01334
29.33	0.00394	29.93	0.00487	30.53	0.01349
29.34	0.00379	29.94	0.00501	30.54	0.01363
29.35	0.00364	29.95	0.00516	30.55	0.01377
29.36	0.00349	29.96	0.00530	30.56	0.01391
29.37	0.00334	29.97	0.00545	30.57	0.01405
29.38	0.00320	29.98	0.00559	30.58	0.01420
29.39	0.00305	29.99	0.00574	30.59	0.01434
29.40	0.00290	30.00	0.00588	30.60	0.01448
29.41	0.00275	30.01	0.00602	30.61	0.01462
29.42	0.00260	30.02	0.00617	30.62	0.01476
29.43	0.00246	30.03	0.00631	30.63	0.01490
29.44	0.00231	30.04	0.00646	30.64	0.01504
29.45	0.00216	30.05	0.00660	30.65	0.01519
29.46	0.00201	30.06	0.00674	30.66	0.01533
29.47	0.00186	30.07	0.00689	30.67	0.01547
29.48	0.00172	30.08	0.00703	30.68	0.01561
29.49	0.00157	30.09	0.00718	30.69	0.01575
29.50	0.00142	30.10	0.00732	30.70	0.01589
29.51	0.00127	30.11	0.00746	30.71	0.01603
29.52	0.00113	30.12	0.00761	30.72	0.01617
29.53	0.00098	30.13	0.00775	30.73	0.01632
29.54	0.00083	30.14	0.00790	30.74	0.01646
29.55	0.00068	30.15	0.00804	30.75	0.01660
29.56	0.00054	30.16	0.00818	30.76	0.01674
29.57	0.00039	30.17	0.00833	30.77	0.01688
29.58	0.00024	30.18	0.00847	30.78	0.01703
29.59	— 0.00010	30.19	0.00862	30.79	0.01717
29.60	+ 0.00005	30.20	0.00876	30.80	0.01731
29.61	0.00020	30.21	0.00890	30.81	0.01745
29.62	0.00034	30.22	0.00905	30.82	0.01759
29.63	0.00049	30.23	0.00919	30.83	0.01773
29.64	0.00063	30.24	0.00934	30.84	0.01787
29.65	0.00078	30.25	0.00948	30.85	0.01801
29.66	0.00093	30.26	0.00962	30.86	0.01815
29.67	0.00107	30.27	0.00977	30.87	0.01829
29.68	0.00122	30.28	0.00991	30.88	0.01843
29.69	0.00136	30.29	0.01006	30.89	0.01857
29.70	0.00151	30.30	0.01020	30.90	0.01871
29.71	0.00166	30.31	0.01034	30.91	0.01885
29.72	0.00180	30.32	0.01049	30.92	0.01899
29.73	0.00195	30.33	0.01063	30.93	0.01913
29.74	0.00209	30.34	0.01077	30.94	0.01927
29.75	0.00224	30.35	0.01092	30.95	0.01942
29.76	0.00239	30.36	0.01106	30.96	0.01956
29.77	0.00253	30.37	0.01120	30.97	0.01970
29.78	0.00268	30.38	0.01134	30.98	0.01984
29.79	0.00282	30.39	0.01149	30.99	0.01998
29.80	0.00297	30.40	0.01163	31.00	0.02012
29.81	0.00312	30.41	0.01177	31.01	0.02026
29.82	0.00326	30.42	0.01192	31.02	0.02040
29.83	0.00341	30.43	0.01206	31.03	0.02054
29.84	0.00355	30.44	0.01220	31.04	0.02068
29.85	0.00370	30.45	0.01235	31.05	0.02083
29.86	0.00385	30.46	0.01249	31.06	0.02097
29.87	0.00399	30.47	0.01263	31.07	0.02111
29.88	0.00414	30.48	0.01277	31.08	0.02125
29.89	0.00428	30.49	0.01292	31.09	0.02139
29.90	+ 0.00443	30.50	+ 0.01306	31.10	+ 0.02153

Milli- meter	log. B.	Milli- meter	log. B.	Milli- meter	log. B.	Milli- meter	log. B.
720.0	-0.01860	726.0	-0.01500	732.0	-0.01142	738.0	-0.00788
720.1	0.01854	726.1	0.01494	732.1	0.01136	738.1	0.00782
720.2	0.01848	726.2	0.01488	732.2	0.01130	738.2	0.00776
720.3	0.01842	726.3	0.01482	732.3	0.01124	738.3	0.00770
720.4	0.01836	726.4	0.01476	732.4	0.01118	738.4	0.00764
720.5	0.01830	726.5	0.01470	732.5	0.01112	738.5	0.00759
720.6	0.01824	726.6	0.01464	732.6	0.01107	738.6	0.00753
720.7	0.01818	726.7	0.01458	732.7	0.01101	738.7	0.00747
720.8	0.01812	726.8	0.01452	732.8	0.01095	738.8	0.00741
720.9	0.01806	726.9	0.01446	732.9	0.01089	738.9	0.00735
721.0	0.01800	727.0	0.01440	733.0	0.01083	739.0	0.00729
721.1	0.01794	727.1	0.01434	733.1	0.01077	739.1	0.00723
721.2	0.01788	727.2	0.01428	733.2	0.01071	739.2	0.00717
721.3	0.01782	727.3	0.01422	733.3	0.01065	739.3	0.00711
721.4	0.01776	727.4	0.01416	733.4	0.01059	739.4	0.00705
721.5	0.01769	727.5	0.01410	733.5	0.01053	739.5	0.00699
721.6	0.01763	727.6	0.01404	733.6	0.01048	739.6	0.00694
721.7	0.01757	727.7	0.01398	733.7	0.01042	739.7	0.00688
721.8	0.01751	727.8	0.01392	733.8	0.01036	739.8	0.00682
721.9	0.01745	727.9	0.01386	733.9	0.01030	739.9	0.00676
722.0	0.01739	728.0	0.01380	734.0	0.01024	740.0	0.00670
722.1	0.01733	728.1	0.01374	734.1	0.01018	740.1	0.00664
722.2	0.01727	728.2	0.01368	734.2	0.01012	740.2	0.00658
722.3	0.01721	728.3	0.01362	734.3	0.01006	740.3	0.00653
722.4	0.01715	728.4	0.01356	734.4	0.01000	740.4	0.00647
722.5	0.01709	728.5	0.01350	734.5	0.00994	740.5	0.00641
722.6	0.01703	728.6	0.01345	734.6	0.00989	740.6	0.00635
722.7	0.01697	728.7	0.01339	734.7	0.00983	740.7	0.00629
722.8	0.01691	728.8	0.01333	734.8	0.00977	740.8	0.00624
722.9	0.01685	728.9	0.01327	734.9	0.00971	740.9	0.00618
723.0	0.01679	729.0	0.01321	735.0	0.00965	741.0	0.00612
723.1	0.01673	729.1	0.01315	735.1	0.00959	741.1	0.00606
723.2	0.01667	729.2	0.01309	735.2	0.00953	741.2	0.00600
723.3	0.01661	729.3	0.01303	735.3	0.00947	741.3	0.00594
723.4	0.01655	729.4	0.01297	735.4	0.00941	741.4	0.00588
723.5	0.01649	729.5	0.01291	735.5	0.00935	741.5	0.00582
723.6	0.01643	729.6	0.01285	735.6	0.00930	741.6	0.00577
723.7	0.01637	729.7	0.01279	735.7	0.00924	741.7	0.00571
723.8	0.01631	729.8	0.01273	735.8	0.00918	741.8	0.00565
723.9	0.01625	729.9	0.01267	735.9	0.00912	741.9	0.00559
724.0	0.01619	730.0	0.01261	736.0	0.00906	742.0	0.00553
724.1	0.01613	730.1	0.01255	736.1	0.00900	742.1	0.00547
724.2	0.01607	730.2	0.01249	736.2	0.00894	742.2	0.00541
724.3	0.01601	730.3	0.01243	736.3	0.00888	742.3	0.00535
724.4	0.01595	730.4	0.01237	736.4	0.00882	742.4	0.00529
724.5	0.01589	730.5	0.01231	736.5	0.00876	742.5	0.00523
724.6	0.01584	730.6	0.01226	736.6	0.00871	742.6	0.00518
724.7	0.01578	730.7	0.01220	736.7	0.00865	742.7	0.00512
724.8	0.01572	730.8	0.01214	736.8	0.00859	742.8	0.00506
724.9	0.01566	730.9	0.01208	736.9	0.00853	742.9	0.00500
725.0	0.01560	731.0	0.01202	737.0	0.00847	743.0	0.00494
725.1	0.01554	731.1	0.01196	737.1	0.00841	743.1	0.00488
725.2	0.01548	731.2	0.01190	737.2	0.00835	743.2	0.00482
725.3	0.01542	731.3	0.01184	737.3	0.00829	743.3	0.00477
725.4	0.01536	731.4	0.01178	737.4	0.00823	743.4	0.00471
725.5	0.01530	731.5	0.01172	737.5	0.00817	743.5	0.00465
725.6	0.01524	731.6	0.01166	737.6	0.00812	743.6	0.00459
725.7	0.01518	731.7	0.01160	737.7	0.00806	743.7	0.00453
725.8	0.01512	731.8	0.01154	737.8	0.00800	743.8	0.00448
725.9	0.01506	731.9	0.01148	737.9	0.00794	743.9	0.00442
726.0	-0.01500	732.0	-0.01142	738.0	-0.00788	744.0	-0.00436

Millimeter	log. B.	Millimeter	log. B.	Millimeter	log. B.
744.0	— 0.00436	750.0	— 0.00087	756.0	+ 0.00259
744.1	0 00430	750.1	0.00081	756.1	0.00265
744.2	0.00424	750.2	0.00075	756.2	0.00270
744.3	0.00419	750.3	0.00070	756.3	0.00276
744.4	0.00413	750.4	0.00064	756.4	0.00282
744.5	0.00407	750.5	0.00058	756.5	0.00288
744.6	0.00401	750.6	0.00052	756.6	0.00293
744.7	0.00395	750.7	0.00046	756.7	0.00299
744.8	0.00390	750.8	0.00041	756.8	0.00305
744.9	0.00384	750.9	0.00035	756.9	0.00310
745.0	0.00378	751.0	0.00029	757.0	0.00316
745.1	0.00372	751.1	0.00023	757.1	0.00322
745.2	0.00366	751.2	0.00018	757.2	0.00328
745.3	0.00360	751.3	0.00012	757.3	0.00333
745.4	0.00354	751.4	— 0.00006	757.4	0.00339
745.5	0.00348	751.5	0.00000	757.5	0.00345
745.6	0.00343	751.6	+ 0.00005	757.6	0.00351
745.7	0.00337	751.7	0.00011	757.7	0.00357
745.8	0.00331	751.8	0.00017	757.8	0.00362
745.9	0.00325	751.9	0.00022	757.9	0.00368
746.0	0.00319	752.0	0.00028	758.0	0.00374
746.1	0.00313	752.1	0.00034	758.1	0.00380
746.2	0.00307	752.2	0.00040	758.2	0.00385
746.3	0.00302	752.3	0.00045	758.3	0.00391
746.4	0 00296	752.4	0.00051	758.4	0.00397
746.5	0.00290	752.5	0.00057	758.5	0.00403
746.6	0.00284	752.6	0.00063	758.6	0.00408
746.7	0.00278	752.7	0.00069	758.7	0.00414
746.8	0.00273	752.8	0.00074	758.8	0.00420
746.9	0.00267	752.9	0.00080	758.9	0.00425
747.0	0.00261	753.0	0.00086	759.0	0.00431
747.1	0.00255	753.1	0.00092	759.1	0.00437
747.2	0.00249	753.2	0.00098	759.2	0.00442
747.3	0.00244	753.3	0.00103	759.3	0.00448
747.4	0.00238	753.4	0.00109	759.4	0.00454
747.5	0.00232	753.5	0.00115	759.5	0.00460
747.6	0.00226	753.6	0.00121	759.6	0.00465
747.7	0.00220	753.7	0.00127	759.7	0.00471
747.8	0.00215	753.8	0 00132	759.8	0.00477
747.9	0 00209	753.9	0.00138	759.9	0.00482
748.0	0.00203	754.0	0.00144	760.0	0.00488
748.1	0.00197	754.1	0.00150	760.1	0.00494
748.2	0.00191	754.2	0.00155	760.2	0.00499
748.3	0.00186	754.3	0.00161	760.3	0.00505
748.4	0.00180	754.4	0.00167	760.4	0.00511
748.5	0.00174	754.5	0.00173	760.5	0.00517
748.6	0.00168	754.6	0.00178	760.6	0.00522
748.7	0.00162	754.7	0.00184	760.7	0.00528
748.8	0.00157	754.8	0.00190	760.8	0.00534
748.9	0.00151	754.9	0.00195	760.9	0.00539
749.0	0 00145	755.0	0.00201	761.0	0.00545
749.1	0.00139	755.1	0.00207	761.1	0.00551
749.2	0.00133	755.2	0.00213	761.2	0.00556
749.3	0.00128	755.3	0.00218	761.3	0.00562
749.4	0.00122	755.4	0.00224	761.4	0.00568
749.5	0.00116	755.5	0.00230	761.5	0.00574
749.6	0.00110	755.6	0.00236	761.6	0.00579
749.7	0.00105	755.7	0.00242	761.7	0.00585
749.8	0.00099	755.8	0.00247	761.8	0.00591
749.9	0.00093	755.9	0.00253	761.9	0.00596
750.0	— 0.00087	756.0	+ 0 00259	762.0	+ 0.00602

Millimeter	log. B.	Millimeter	log. B.	Millimeter	log. B.
762.0	+ 0.00602	768.0	+ 0.00943	774.0	+ 0.01281
762.1	0.00608	768.1	0.00949	774.1	0.01287
762.2	0.00613	768.2	0.00954	774.2	0.01292
762.3	0.00619	768.3	0.00960	774.3	0.01298
762.4	0.00625	768.4	0.00965	774.4	0.01303
762.5	0.00631	768.5	0.00971	774.5	0.01309
762.6	0.00636	768.6	0.00977	774.6	0.01315
762.7	0.00642	768.7	0.00982	774.7	0.01320
762.8	0.00648	768.8	0.00988	774.8	0.01326
762.9	0.00653	768.9	0.00993	774.9	0.01331
763.0	0.00659	769.0	0.00999	775.0	0.01337
763.1	0.00665	769.1	0.01005	775.1	0.01343
763.2	0.00670	769.2	0.01010	775.2	0.01348
763.3	0.00676	769.3	0.01016	775.3	0.01354
763.4	0.00682	769.4	0.01022	775.4	0.01359
763.5	0.00688	769.5	0.01028	775.5	0.01365
763.6	0.00693	769.6	0.01033	775.6	0.01371
763.7	0.00699	769.7	0.01039	775.7	0.01376
763.8	0.00705	769.8	0.01045	775.8	0.01382
763.9	0.00710	769.9	0.01050	775.9	0.01387
764.0	0.00716	770.0	0.01056	776.0	0.01393
764.1	0.00722	770.1	0.01062	776.1	0.01399
764.2	0.00727	770.2	0.01067	776.2	0.01404
764.3	0.00733	770.3	0.01073	776.3	0.01410
764.4	0.00739	770.4	0.01078	776.4	0.01415
764.5	0.00745	770.5	0.01084	776.5	0.01421
764.6	0.00750	770.6	0.01090	776.6	0.01427
764.7	0.00756	770.7	0.01095	776.7	0.01432
764.8	0.00762	770.8	0.01101	776.8	0.01438
764.9	0.00767	770.9	0.01106	776.9	0.01443
765.0	0.00773	771.0	0.01112	777.0	0.01449
765.1	0.00779	771.1	0.01118	777.1	0.01455
765.2	0.00784	771.2	0.01123	777.2	0.01460
765.3	0.00790	771.3	0.01129	777.3	0.01466
765.4	0.00796	771.4	0.01134	777.4	0.01471
765.5	0.00802	771.5	0.01140	777.5	0.01477
765.6	0.00807	771.6	0.01146	777.6	0.01483
765.7	0.00813	771.7	0.01151	777.7	0.01488
765.8	0.00819	771.8	0.01157	777.8	0.01494
765.9	0.00824	771.9	0.01162	777.9	0.01499
766.0	0.00830	772.0	0.01168	778.0	0.01505
766.1	0.00836	772.1	0.01174	778.1	0.01511
766.2	0.00841	772.2	0.01179	778.2	0.01516
766.3	0.00847	772.3	0.01185	778.3	0.01522
766.4	0.00852	772.4	0.01191	778.4	0.01527
766.5	0.00858	772.5	0.01197	778.5	0.01533
766.6	0.00864	772.6	0.01202	778.6	0.01538
766.7	0.00869	772.7	0.01208	778.7	0.01544
766.8	0.00875	772.8	0.01214	778.8	0.01549
766.9	0.00880	772.9	0.01219	778.9	0.01555
767.0	0.00886	773.0	0.01225	779.0	0.01560
767.1	0.00892	773.1	0.01231	779.1	0.01566
767.2	0.00897	773.2	0.01236	779.2	0.01571
767.3	0.00903	773.3	0.01242	779.3	0.01577
767.4	0.00909	773.4	0.01247	779.4	0.01582
767.5	0.00915	773.5	0.01253	779.5	0.01588
767.6	0.00920	773.6	0.01259	779.6	0.01594
767.7	0.00926	773.7	0.01264	779.7	0.01599
767.8	0.00932	773.8	0.01270	779.8	0.01605
767.9	0.00937	773.9	0.01275	779.9	0.01610
768.0	+ 0.00943	774.0	+ 0.01281	780.0	+ 0.01616

F.	log. γ	F.	log. γ	F.	log. γ
	Diff.		Diff.		Diff.
-25 ⁰	+0.06773	15 ⁰	+0.02969	55 ⁰	-0.00528
24	06674	16	02878	56	00612
23	06575	17	02787	57	00696
22	06476	18	02697	58	00780
21	06377	19	02606	59	00863
20	06279	20	02516	60	00946
	98		90		83
19	06181	21	02426	61	01029
18	06083	22	02336	62	01112
17	05985	23	02247	63	01195
16	05887	24	02157	64	01278
15	05790	25	02068	65	01360
	97		89		83
14	05693	26	01979	66	01443
13	05596	27	01890	67	01525
12	05500	28	01801	68	01607
11	05403	29	01713	69	01689
10	05307	30	01624	70	01770
	96		88		82
9	05211	31	01536	71	01852
8	05115	32	01448	72	01933
7	05020	33	01360	73	02015
6	04924	34	01273	74	02096
5	04829	35	01185	75	02177
	95		87		80
4	04734	36	01098	76	02257
3	04640	37	01011	77	02338
2	04545	38	00924	78	02419
1	04451	39	00837	79	02499
- 0	04357	40	00750	80	02579
	94		86		80
1	04263	41	00664	81	02659
+	04169	42	00578	82	02738
2	04076	43	00492	83	02818
3	03982	44	00406	84	02898
4	03889	45	00320	85	02978
	93		86		79
6	03796	46	00234	86	03057
7	03704	47	00149	87	03136
8	03611	48	+0.00064	88	03216
9	03519	49	-0.00021	89	03294
10	03427	50	00106	90	03373
	92		85		79
11	03335	51	00191	91	03452
12	03243	52	00275	92	03530
13	03152	53	00360	93	03609
14	03060	54	00444	94	03687
15	+0.02969	55	-0.00528	95	-0.03765

Grade.	Réaumur. log. γ .		Centes. log. γ .		Grade.	Réaumur. log. γ .		Centes. log. γ .	
	+	Diff.	+	Diff.			Diff.		Diff.
35	0.08990	235	0.07373	181	0°	+0.01448	197	+0.01448	158
34	08755	233	07192	180	+1	01251	197	01290	157
33	08522	232	07012	179	2	01054	195	01133	157
32	08290	231	06833	179	3	00859	195	00976	156
31	08059	230	06654	178	4	00664	194	00820	156
30	07829	228	06476	178	5	00470	193	00664	155
29	07601	228	06298	176	6	00277	192	00509	155
28	07373	226	06122	176	7	+0.00085	191	00354	154
27	07147	225	05946	175	8	-0.00106	191	00200	153
26	06922	224	05771	175	9	00297	189	+0.00047	153
25	06698	222	05596	173	10	00486	189	-0.00106	153
24	06476	222	05423	174	11	00675	188	00259	151
23	06254	220	05249	172	12	00863	187	00410	152
22	06034	219	05077	172	13	01050	186	00562	151
21	05815	218	04905	171	14	01236	186	00713	150
20	05596	217	04734	170	15	01422	185	00863	150
19	05379	216	04564	170	16	01607	184	01013	149
18	05163	215	04394	169	17	01791	183	01162	149
17	04948	214	04225	168	18	01974	182	01311	148
16	04734	212	04057	168	19	02156	182	01459	148
15	04522	212	03889	167	20	02338	181	01607	147
14	04310	211	03722	166	21	02519	180	01754	147
13	04099	210	03556	166	22	02699	180	01901	146
12	03889	208	03390	165	23	02879	178	02047	145
11	03681	208	03225	165	24	03057	178	02192	146
10	03473	207	03060	164	25	03235	177	02338	145
9	03266	206	02896	163	26	03412	177	02483	144
8	03060	205	02733	163	27	03589	176	02627	144
7	02855	203	02570	162	28	03765	175	02771	143
6	02652	203	02408	161	29	03940	174	02914	143
5	02449	202	02247	161	30	04114	174	03057	143
4	02247	201	02086	160	31	04288	173	03200	142
3	02046	200	01926	160	32	04461	172	03342	141
2	01846	200	01766	159	33	04633	172	03483	141
1	01646	198	01607	159	34	04805	171	03624	141
0	0.01448		0.01448		35	-0.04976		-0.03765	
-	+		+						

Geogr. Breite	Geogr. Breite — Verb. Breite	log. Entfernung v. Centr.	Geogr. Breite	Geogr. Breite — Verb. Breite	log. Entfernung v. Centr.
0° 0'	0° 0.00 4.00	0.0000000	10° 0'	3° 55.47 3.77	9.9999566
10	4.00 4.00	0.0000000	10	59.24 3.75	551 15
20	8.01 4.01	0.0000000	20	4 2.99 3.75	537 14
30	12.01 4.00	9.9999999	30	6.74 3.75	522 13
40	16.02 4.01	998 1	40	10.47 3.73	507 13
50	20.02 4.00	997 1	50	14.20 3.73	491 16
1° 0	0° 24.02 4.00	9.9999996	11° 0	4 17.92 3.72	9.9999476
10	28.02 4.00	994 2	10	21.63 3.71	460 16
20	32.03 4.01	992 2	20	25.34 3.71	444 16
30	36.03 4.00	990 2	30	29.03 3.69	428 16
40	40.02 3.99	988 2	40	32.71 3.68	411 17
50	44.02 4.00	985 3	50	36.39 3.68	394 17
2° 0	0° 48.02 3.99	9.9999982	12° 0	4 40.06 3.67	9.9999377
10	52.01 3.99	979 3	10	43.71 3.65	360 17
20	56.00 3.99	976 3	20	47.36 3.65	343 17
30	59.99 3.99	973 3	30	51.00 3.64	325 18
40	1 3.98 3.99	969 4	40	54.63 3.63	307 18
50	7.97 3.99	965 4	50	58.24 3.61	289 18
3° 0	1 11.95 3.98	9.9999961	13° 0	5 1.85 3.61	9.9999271
10	15.93 3.98	956 5	10	5.45 3.60	253 18
20	19.91 3.98	951 5	20	9.04 3.59	234 19
30	23.89 3.98	946 5	30	12.62 3.58	215 19
40	27.86 3.97	941 5	40	16.18 3.56	196 19
50	31.83 3.97	936 6	50	19.74 3.56	177 19
4° 0	1 35.80 3.97	9.9999930	14° 0	5 23.28 3.54	9.9999157
10	39.77 3.97	924 6	10	26.82 3.54	137 20
20	43.73 3.96	918 6	20	30.34 3.52	117 20
30	47.69 3.96	911 6	30	33.86 3.52	997 20
40	51.64 3.95	905 7	40	37.36 3.50	976 21
50	55.59 3.95	898 7	50	40.85 3.49	956 20
5° 0	1 59.54 3.94	9.9999891	15° 0	5 44.33 3.48	9.9999035
10	2 3.48 3.94	883 7	10	47.79 3.46	9014 21
20	7.42 3.94	876 8	20	51.25 3.46	8993 21
30	11.35 3.93	868 8	30	54.69 3.44	8971 22
40	15.28 3.93	860 9	40	58.12 3.43	8949 22
50	19.20 3.92	851 8	50	6 1.54 3.42	8928 21
6° 0	2 23.12 3.92	9.9999843	16° 0	6 4.95 3.41	9.9998905
10	27.04 3.92	834 9	10	8.35 3.40	8883 22
20	30.95 3.91	825 9	20	11.73 3.38	8861 22
30	34.86 3.91	815 9	30	15.10 3.37	8838 23
40	38.76 3.90	806 10	40	18.46 3.36	8815 23
50	42.65 3.89	796 10	50	21.80 3.34	8792 23
7° 0	2 46.54 3.89	9.9999786	17° 0	6 25.14 3.34	9.9998768
10	50.43 3.87	776 10	10	28.46 3.32	8745 23
20	54.30 3.87	765 11	20	31.76 3.30	8721 24
30	58.18 3.88	755 10	30	35.06 3.30	8697 24
40	3 2.04 3.86	744 11	40	38.34 3.28	8673 24
50	5.90 3.86	733 12	50	41.60 3.26	8649 24
8° 0	3 9.76 3.85	9.9999721	18° 0	6 44.86 3.26	9.9998624
10	13.61 3.85	709 11	10	48.10 3.24	8599 25
20	17.45 3.84	698 11	20	51.32 3.22	8574 25
30	21.28 3.83	685 13	30	54.53 3.21	8549 25
40	25.11 3.83	673 12	40	57.73 3.20	8524 25
50	28.93 3.82	660 13	50	7 0.92 3.19	8498 26
9° 0	3 32.74 3.81	9.9999648	19° 0	7 4.09 3.17	9.9998472
10	36.55 3.81	635 13	10	7.24 3.15	8446 26
20	40.35 3.80	621 14	20	10.38 3.14	8420 26
30	44.14 3.79	608 13	30	13.51 3.13	8394 26
40	47.93 3.79	594 14	40	16.62 3.11	8368 26
50	51.71 3.78	580 14	50	19.72 3.10	8341 27
10° 0	3 55.47 3.76	9.9999566	20° 0	7 22.80 3.08	9.9998314

Geogr. Breite	Geogr. Breite — Verb. Breite	log. Entfernung v. Centr.	Geogr. Breite	Geogr. Breite — Verb. Breite	log. Entfernung v. Centr.
20° 0'	7 22.80	9.9998314	30° 0'	9 57.12	9.9996392
10	25.87 3.07	8287 27	10	59.12 2.00	6355 37
20	28.93 3.03	8260 28	20	1.11 1.99	6319 36
30	31.96 3.03	8232 27	30	3.07 1.95	6282 37
40	34.99 3.00	8203 28	40	5.02 1.92	6245 37
50	37.99 3.00	8177 28	50	6.94 1.91	6208 37
21° 0'	7 40.99	9.9998149	31° 0'	10 8.85	9.9996171
10	43.96 2.97	8121 29	10	10.73 1.88	6134 38
20	46.92 2.96	8092 29	20	12.59 1.86	6096 38
30	49.87 2.95	8064 28	30	14.44 1.85	6059 37
40	52.80 2.93	8035 29	40	16.26 1.82	6021 38
50	55.71 2.91	8006 29	50	18.06 1.80	5984 37
22° 0'	7 58.61	9.9997977	32° 0'	10 19.84	9.9995946
10	8 1 49 2.88	7948 29	10	21.60 1.76	5908 38
20	4.36 2.87	7918 30	20	23.34 1.74	5870 38
30	7.21 2.85	7889 30	30	25.05 1.71	5832 38
40	10.04 2.83	7859 30	40	26.75 1.70	5794 38
50	12.86 2.82	7829 30	50	28.43 1.68	5755 39
23° 0'	8 15.66	9.9997799	33° 0'	10 30.08	9.9995717
10	18.44 2.78	7768 31	10	31.71 1.63	5678 39
20	21.21 2.77	7738 30	20	33.32 1.61	5640 39
30	23.96 2.75	7707 31	30	34.91 1.59	5601 39
40	26.69 2.73	7676 31	40	36.48 1.57	5562 39
50	29.41 2.72	7646 30	50	38.03 1.55	5523 39
24° 0'	8 32.10	9.9997614	34° 0'	10 39.55	9.9995484
10	34.79 2.69	7583 31	10	41.06 1.51	5445 39
20	37.45 2.66	7552 31	20	42.54 1.48	5406 39
30	40.10 2.65	7520 32	30	44.00 1.46	5367 39
40	42.73 2.63	7488 32	40	45.44 1.44	5327 40
50	45.34 2.61	7456 32	50	46.86 1.42	5288 39
25° 0'	8 47.93	9.9997424	35° 0'	10 48.25	9.9995248
10	50.51 2.58	7392 32	10	49.63 1.38	5208 40
20	53.06 2.55	7359 33	20	50.98 1.35	5169 39
30	55.61 2.53	7327 32	30	52.31 1.33	5129 40
40	58.13 2.52	7294 33	40	53.62 1.31	5089 40
50	9 0.63 2.50	7261 33	50	54.90 1.28	5049 40
26° 0'	9 3.12 2.49	9.9997228	36° 0'	10 56.16	9.9995009
10	5.59 2.47	7193 33	10	57.41 1.25	4969 40
20	8.04 2.45	7162 33	20	58.63 1.22	4929 40
30	10.47 2.43	7128 34	30	59.82 1.19	4888 41
40	12.88 2.41	7094 34	40	1.00 1.18	4848 40
50	15.27 2.39	7061 33	50	2.15 1.15	4807 41
27° 0'	9 17.65 2.38	9.9997027	37° 0'	11 3.28 1.13	9.9994767
10	20.00 2.35	6993 34	10	4.39 1.11	4726 41
20	22.34 2.34	6958 35	20	5.47 1.08	4686 40
30	24.66 2.32	6924 34	30	6.54 1.07	4645 41
40	26.96 2.30	6889 35	40	7.58 1.04	4604 41
50	29.24 2.28	6855 34	50	8.59 1.01	4563 41
28° 0'	9 31.50 2.26	9.9996820	38° 0'	11 9.59 1.00	9.9994522
10	33.74 2.24	6783 35	10	10.56 0.97	4481 41
20	35.97 2.23	6750 35	20	11.51 0.95	4440 41
30	38.17 2.20	6715 36	30	12.44 0.93	4399 41
40	40.36 2.19	6679 35	40	13.34 0.90	4358 41
50	42.52 2.16	6644 35	50	14.22 0.88	4317 41
29° 0'	9 44.66 2.14	9.9996608	39° 0'	11 15.08 0.86	9.9994276
10	46.79 2.13	6573 35	10	15.92 0.84	4234 42
20	48.90 2.11	6537 36	20	16.73 0.81	4193 41
30	50.98 2.08	6501 36	30	17.52 0.79	4152 41
40	53.05 2.07	6465 36	40	18.29 0.77	4110 42
50	55.09 2.04	6428 37	50	19.04 0.75	4069 41
30° 0'	9 57.12 2.03	9.9996392	40° 0'	11 19.76 0.72	9.9994027

Geogr. Breite	Geogr. Breite — Verb. Breite	log. Entfernung v. Centr.	Geogr. Breite	Geogr. Breite — Verb. Breite	log. Entfernung v. Centr.
40° 0'	11° 19.76 70	9.9994027 42	50° 0'	11° 20.55 70	9.9991502 42
10	20.46 67	3985 41	10	19.85 72	1460 41
20	21.13 66	3944 42	20	19.13 74	1419 41
30	21.79 63	3902 42	30	18.39 76	1377 42
40	22.42 60	3860 41	40	17.63 79	1335 42
50	23.02 59	3819 42	50	16.84 82	1294 41
41° 0'	11° 23.61 56	9.9993777 42	51° 0'	11° 16.02 83	9.9991252 41
10	24.17 53	3735 42	10	15.19 86	1211 41
20	24.70 52	3693 42	20	14.33 88	1170 41
30	25.22 49	3651 42	30	13.45 90	1128 42
40	25.71 47	3609 42	40	12.55 93	1087 41
50	26.18 44	3567 42	50	11.62 95	1046 41
42° 0'	11° 26.62 42	9.9993525 42	52° 0'	11° 10.67 97	9.9991005 42
10	27.04 40	3483 42	10	9.70 99	0963 41
20	27.44 38	3441 42	20	8.71 1.02	0922 41
30	27.82 35	3399 42	30	7.69 1.03	0881 41
40	28.17 33	3357 42	40	6.66 1.06	0840 41
50	28.50 30	3315 42	50	5.60 1.09	0800 40
43° 0'	11° 28.80 38	9.9993273 43	53° 0'	11° 4.51 1.11	9.9990759 41
10	29.08 26	3230 42	10	3.40 1.13	0718 41
20	29.34 24	3188 42	20	2.27 1.15	0677 41
30	29.58 21	3146 42	30	1.12 1.18	0637 40
40	29.79 19	3104 42	40	59.94 1.20	0596 41
50	29.98 16	3062 43	50	58.74 1.22	0556 40
44° 0'	11° 30.14 15	9.9993019 42	54° 0'	10° 57.52 1.24	9.9990515 41
10	30.29 12	2977 42	10	56.28 1.26	0475 40
20	30.41 9	2935 43	20	55.02 1.29	0435 40
30	30.50 7	2892 42	30	53.73 1.31	0395 40
40	30.57 5	2850 42	40	52.42 1.33	0355 40
50	30.62 3	2808 42	50	51.09 1.35	0315 40
45° 0'	11° 30.65 0	9.9992766 43	55° 0'	10° 49.74 1.38	9.9990275 40
10	30.65 2	2723 42	10	48.36 1.39	0233 40
20	30.63 5	2681 42	20	46.97 1.42	0195 40
30	30.58 7	2639 42	30	45.55 1.44	0155 39
40	30.51 9	2596 42	40	44.11 1.46	0116 40
50	30.42 11	2554 42	50	42.65 1.49	0076 40
46° 0'	11° 30.31 14	9.9992512 42	56° 0'	10° 41.16 1.51	9.9990037 39
10	30.17 16	2470 42	10	39.65 1.52	89998 39
20	30.01 19	2427 43	20	38.13 1.55	89958 40
30	29.82 21	2385 42	30	36.58 1.57	89919 39
40	29.61 23	2343 42	40	35.01 1.60	89880 39
50	29.38 26	2300 43	50	33.41 1.61	89841 39
47° 0'	11° 29.12 27	9.9992258 42	57° 0'	10° 31.80 1.64	9.9989802 38
10	28.85 31	2216 42	10	30.16 1.66	89764 39
20	28.54 32	2174 42	20	28.50 1.67	89725 39
30	28.22 35	2132 42	30	26.83 1.70	89686 38
40	27.87 37	2089 43	40	25.13 1.73	89648 38
50	27.50 40	2047 42	50	23.40 1.74	89610 38
48° 0'	11° 27.10 41	9.9992005 42	58° 0'	10° 21.66 1.76	9.9989571 37
10	26.69 45	1963 42	10	19.90 1.79	89533 38
20	26.24 46	1921 42	20	18.11 1.80	89495 38
30	25.78 49	1879 42	30	16.31 1.83	89457 38
40	25.29 51	1837 42	40	14.48 1.85	89419 37
50	24.78 54	1795 42	50	12.63 1.86	89382 38
49° 0'	11° 24.24 55	9.9991753 42	59° 0'	10° 10.77 1.89	9.9989344 37
10	23.69 58	1711 42	10	8.88 1.91	89307 38
20	23.11 61	1669 42	20	6.97 1.93	89269 38
30	22.50 63	1627 42	30	5.04 1.96	89232 37
40	21.87 65	1586 41	40	3.08 1.97	89195 37
50	21.22 67	1544 42	50	1.11 1.99	89158 37
50° 0'	11° 20.55 67	9.9991502 42	60° 0'	9° 59.12 1.99	9.9989121 37

Geogr. Breite	Geogr. Breite — Verb. Breite	log. Entfernung v. Centr.	Geogr. Breite	Geogr. Breite — Verb. Breite	log. Entfernung v. Centr.
60° 0'	9 59.12 2.01	9.9989121 37	70° 0'	7 25.08 3.09	9.9987174 27
10	57.11 2.03	89084 36	10	21.99 3.10	87147 27
20	55.08 2.06	89048 37	20	18.89 3.12	87120 27
30	53.02 2.07	89011 36	30	15.77 3.13	87093 27
40	50.95 2.09	88975 36	40	12.64 3.15	87066 26
50	48.86 2.12	88939 37	50	9.49 3.16	87040 27
61° 0'	9 46.74 2.13	9.9988902 36	71° 0'	7 6.33 3.18	9.9987013 26
10	44.61 2.15	88866 35	10	3.15 3.19	86987 26
20	42.46 2.18	88831 36	20	6 59.96 3.20	86961 25
30	40.28 2.19	88795 36	30	56.76 3.22	86936 25
40	38.09 2.21	88759 35	40	53.54 3.24	86910 25
50	35.88 2.23	88724 36	50	50.30 3.24	86885 26
62° 0'	9 33.65 2.25	9.9988688 35	72° 0'	6 47.06 3.27	9.9986859 24
10	31.40 2.28	88653 35	10	43.79 3.27	86835 25
20	29.12 2.29	88618 35	20	40.52 3.29	86810 25
30	26.83 2.31	88583 35	30	37.23 3.30	86785 25
40	24.52 2.32	88548 34	40	33.93 3.32	86761 24
50	22.20 2.35	88514 35	50	30.61 3.33	86737 24
63° 0'	9 19.85 2.37	9.9988479 34	73° 0'	6 27.28 3.34	9.9986713 24
10	17.48 2.39	88443 34	10	23.94 3.36	86689 24
20	15.09 2.40	88411 34	20	20.58 3.37	86665 23
30	12.69 2.42	88377 34	30	17.21 3.38	86642 23
40	10.27 2.45	88343 34	40	13.83 3.39	86619 23
50	7.82 2.46	88309 34	50	10.44 3.41	86596 23
64° 0'	9 5.36 2.48	9.9988275 33	74° 0'	6 7.03 3.42	9.9986573 22
10	2.88 2.50	88242 33	10	3.61 3.43	86551 22
20	0.38 2.51	88209 33	20	0.18 3.45	86529 21
30	8 57.87 2.54	88176 33	30	5 56.73 3.45	86506 21
40	55.33 2.55	88143 33	40	53.28 3.47	86485 22
50	52.78 2.57	88110 33	50	49.81 3.48	86463 22
65° 0'	8 50.21 2.59	9.9988077 33	75° 0'	5 46.33 3.49	9.9986441 21
10	47.62 2.61	88044 32	10	42.84 3.51	86420 21
20	45.01 2.62	88012 32	20	39.33 3.51	86399 21
30	42.39 2.65	87980 32	30	35.82 3.53	86378 20
40	39.74 2.66	87948 32	40	32.29 3.53	86358 20
50	37.08 2.68	87916 32	50	28.75 3.54	86338 21
66° 0'	8 34.40 2.69	9.9987884 31	76° 0'	5 25.20 3.55	9.9986317 20
10	31.71 2.72	87853 31	10	21.64 3.56	86297 19
20	28.99 2.73	87821 31	20	18.07 3.57	86278 20
30	26.26 2.74	87790 31	30	14.49 3.58	86258 19
40	23.52 2.77	87759 31	40	10.89 3.60	86239 19
50	20.75 2.78	87728 31	50	7.29 3.62	86220 19
67° 0'	8 17.97 2.80	9.9987697 30	77° 0'	5 3.67 3.62	9.9986201 18
10	15.17 2.82	87667 31	10	0.05 3.64	86183 19
20	12.35 2.83	87636 30	20	4 56.41 3.64	86164 18
30	9.52 2.85	87606 30	30	52.77 3.66	86146 18
40	6.67 2.86	87576 30	40	49.11 3.66	86128 18
50	3.81 2.89	87546 29	50	45.45 3.68	86110 17
68° 0'	8 0.92 2.90	9.9987517 30	78° 0'	4 41.77 3.68	9.9986093 17
10	7 58.02 2.91	87487 29	10	38.09 3.69	86076 17
20	55.11 2.93	87458 29	20	34.40 3.71	86059 17
30	52.18 2.95	87429 29	30	30.69 3.71	86042 17
40	49.23 2.96	87400 29	40	26.98 3.72	86025 16
50	46.27 2.98	87371 29	50	23.26 3.73	86009 16
69° 0'	7 43.29 3.00	9.9987342 28	79° 0'	4 19.53 3.74	9.9985993 16
10	40.29 3.01	87314 28	10	15.79 3.75	85977 16
20	37.28 3.03	87286 28	20	12.04 3.76	85961 15
30	34.25 3.04	87257 27	30	8.28 3.76	85946 15
40	31.21 3.06	87230 28	40	4.52 3.78	85931 15
50	28.15 3.07	87202 28	50	0.74 3.78	85916 15
70° 0'	7 25.08 3.07	9.9987174 28	80° 0'	3 96.96 3.78	9.9985901 15

Geogr. Breite	Geogr. Breite — Verb. Breite	log. Entfernung v. Centr.
80° 0'	3 56.96	9.9985901
10	53.17 3.79	85886 15
20	49.37 3.80	85872 14
30	45.57 3.80	85858 14
40	41.75 3.82	85844 14
50	37.93 3.82	85831 13
81° 0'	3 34.10 3.83	9.9985818 13
10	30.27 3.83	85804 14
20	26.42 3.85	85792 12
30	22.57 3.85	85779 13
40	18.72 3.85	85767 12
50	14.85 3.87	85755 12
82° 0'	3 10.98 3.87	9.9985743 12
10	7.11 3.87	85731 12
20	3.22 3.89	85720 11
30	2 59.33 3.89	85708 12
40	55.44 3.89	85697 11
50	51.54 3.90	85687 10
83° 0'	2 47.63 3.91	9.9985676 11
10	43.71 3.92	85666 10
20	39.80 3.91	85656 10
30	35.87 3.93	85646 10
40	31.94 3.93	85637 9
50	28.01 3.93	85628 9
84° 0'	2 24.07 3.94	9.9985619 9
10	20.12 3.95	85610 9
20	16.17 3.95	85601 9
30	12.22 3.95	85593 8
40	8.26 3.96	85585 8
50	4.29 3.97	85577 8
85° 0'	2 0.33 3.96	9.9985570 7
10	1 56.35 3.98	85562 8
20	52.38 3.97	85555 7
30	48.40 3.98	85549 6
40	44.42 3.98	85542 7
50	40.43 3.99	85536 6
86° 0'	1 36.44 3.99	9.9985530 6
10	32.45 3.99	85524 6
20	28.45 4.00	85518 6
30	24.45 4.00	85513 5
40	20.45 4.00	85508 5
50	16.44 4.01	85503 5
87° 0'	1 12.43 4.01	9.9985498 5
10	8.42 4.01	85494 4
20	4.41 4.01	85490 4
30	0.40 4.01	85486 4
40	0 56.38 4.02	85483 3
50	52.36 4.02	85479 4
88° 0'	0 48.34 4.02	9.9985476 3
10	44.32 4.02	85473 3
20	40.29 4.03	85471 2
30	36.27 4.02	85468 3
40	32.24 4.03	85466 2
50	28.21 4.03	85464 2
89° 0'	0 24.18 4.03	9.9985463 1
10	20.15 4.03	85461 2
20	16.12 4.03	85460 1
30	12.09 4.03	85459 1
40	8.06 4.03	85459 0
50	4.03 4.03	85458 1
90° 0'	0 0.00 4.03	9.9985458 0

	φ'	$\log. \varrho'$	$\lg. \pi \varrho \cos. \varphi'$	$\lg. \pi \varrho \sin. \varphi'$	$\log. \tan. \varphi'$	S.
Åbo	+60° 17' 3"	9.99890	0.64594	0.88949	0.24355	— 58.841
Albany	+42 28 21	9.99934	0.81898	0.78062	9.96163	+57.259
Altona	+53 21 45	9.99906	0.72667	0.85529	0.12861	+ 2.269
Ann Arbor	+42 5 21	9.99935	0.82163	0.77743	9.95580	+63.820
Armagh	+54 10 18	9.99904	0.71828	0.85976	0.14148	+13.170
Athen	+37 47 11	9.99945	0.84906	0.73853	9.88947	— 6.792
Batavia	— 6 5 11	9.99998	0.94935	9.97722 _n	9.02787 _n	—61.377
Berlin	+52 19 9	9.99909	0.73714	0.84932	0.11218	0.000
Bern	+46 45 37	9.99923	0.78677	0.81348	0.02670	+ 3.913
Bilk	+51 1 10	9.99912	0.74963	0.84156	0.09193	+ 4.353
Bologna	+44 18 17	9.99929	0.80580	0.79526	9.98946	+ 1.342
Bonn	+50 32 28	9.99913	0.75408	0.83861	0.08453	+ 4.137
Breslau	+50 55 41	9.99912	0.75048	0.84100	0.09052	— 2.393
Brüssel	+50 39 54	9.99913	0.75294	0.83938	0.08645	+ 5.932
Cambridge (Engl.)	+52 1 42	9.99910	0.73999	0.84762	0.10763	+ 8.740
Cambridge (Mass.)	+42 11 21	9.99934	0.82094	0.77826	9.95732	+55.540
Christiania	+59 44 44	9.99891	0.65302	0.88714	0.23412	+ 1.754
Clinton	+42 51 48	9.99933	0.81624	0.78382	9.96758	+58.351
Danzig	+54 10 23	9.99904	0.71827	0.85977	0.14150	— 3.462
Dorpat	+58 12 30	9.99895	0.67244	0.88017	0.20773	— 8.757
Dublin	+53 12 11	9.99907	0.72830	0.85439	0.12609	+12.969
Durham	+54 35 15	9.99903	0.71387	0.86201	0.14814	+ 9.842
Edinburg	+55 46 42	9.99901	0.70087	0.86827	0.16739	+10.893
Florenz	+43 34 34	9.99931	0.81114	0.78955	9.97841	+ 1.406
Genf	+46 0 29	9.99925	0.79278	0.80806	0.01529	+ 4.758
Glasgow	+55 42 0	9.99901	0.70174	0.86786	0.16612	+11.627
Gotha (Neue Sternw.)	+50 45 21	9.99913	0.75210	0.83995	0.08785	+ 1.764
Göttingen	+51 20 35	9.99911	0.74657	0.84353	0.09695	+ 2.269
Greenwich	+51 17 24	9.99911	0.74707	0.84320	0.09613	+ 8.802
Hamburg	+53 22 6	9.99906	0.72661	0.85532	0.12871	+ 2.248
Helsingfors	+59 59 45	9.99891	0.64975	0.88824	0.23849	— 7.600
Kasan	+55 36 41	9.99901	0.70273	0.86740	0.16468	—23.475
Königsberg	+54 31 59	9.99903	0.71445	0.86171	0.14726	— 4.665
Kopenhagen	+55 30 30	9.99901	0.70387	0.86687	0.16300	+ 0.536
Krakau	+49 52 30	9.99915	0.76016	0.83443	0.07426	— 4.314
Kremsmünster	+47 51 57	9.99920	0.77766	0.82118	0.04352	— 0.485
Leiden	+51 58 11	9.99910	0.74056	0.84727	0.10672	+ 5.856
Leipzig	+51 8 52	9.99912	0.74842	0.84235	0.09392	+ 0.660
Liverpool	+53 13 46	9.99907	0.72804	0.85454	0.12651	+10.774
London (Mr. Bishop)	+51 15 57	9.99911	0.74730	0.84306	0.09575	+ 9.003
London (Mr. Barclay)	+51 23 21	9.99911	0.74613	0.84380	0.09767	+ 8.804

	φ'	$\log. \varrho'$	$\lg. \pi \varrho \cos. \varphi'$	$\lg. \pi \varrho \sin. \varphi'$	$\log. \tan. \varphi'$	S.
Lübeck	+53 40 33	9.99906	0.72346	0.85704	0.13358	+ 18 778
Lund	+55 31 10	9.99901	0.70374	0.86693	0.16318	+ 0.134
Madras	+12 59 5	9.99993	0.94050	0.30334	9.36284	-43.923
Madrid	+40 13 8	9.99939	0.83407	0.76125	9.92718	+11.226
Mailand	+45 16 30	9.99927	0.79848	0.80265	0.00417	+ 2.762
Mannheim	+49 17 50	9.99916	0.76532	0.83071	0.06539	+ 3.242
Marburg	+50 37 30	9.99913	0.75331	0.83914	0.08583	+ 3.039
Marseille	+43 6 20	9.99932	0.81452	0.78578	9.97126	+ 5.275
Melbourne	-37 38 45	9.99946	0.84990	0.73716 _n	9.88727 _n	-86.461
Modena	+44 27 22	9.99929	0.80468	0.79643	9.99175	+ 1.621
Moskau	+55 34 37	9.99901	0.70311	0.86722	0.16412	-15.885
München	+47 57 18	9.99920	0.77691	0.82179	0.04488	+ 1.175
Neapel	+40 40 24	9.99938	0.83112	0.76528	9.93416	- 0.558
Neuchâtel	+46 48 32	9.99923	0.78638	0.81382	0.02744	+ 4. 30
New-York	+40 41 22	9.99938	0.83102	0.76542	9.93441	+57.416
Nicolajeff	+46 46 51	9.99923	0.78661	0.81362	0.02701	-12.209
Olmütz	+49 24 21	9.99916	0.76436	0.83141	0.06706	- 2.554
Oxford	+51 34 24	9.99911	0.74438	0.84492	0.10054	+ 9.631
Padua	+45 12 32	9.99927	0.79899	0.80215	0.00317	+ 1.002
Palermo	+37 55 34	9.99945	0.84824	0.73989	9.89166	+ 0.030
Paramatta	-33 38 12	9.99955	0.87179	0.69482 _n	9.82303 _n	-90.437
Paris	+48 38 48	9.99918	0.77100	0.82644	0.05543	+ 7.266
Petersburg	+59 46 30	9.99891	0.65264	0.88727	0.23463	-11.112
Philadelphia	+39 45 48	9.99940	0.83697	0.75714	9.92017	+58.190
Prag	+49 53 58	9.99915	0.75994	0.83458	0.07464	- 0.675
Pulkowa	+59 36 17	9.99892	0.65486	0.88653	0.23167	-11.126
Rom	+41 42 27	9.99936	0.82424	0.77422	9.94998	+ 0.599
Santiago de Chile	-33 15 51	9.99956	0.87366	0.69056 _n	9.81689 _n	+55.218
Speyer	+49 7 32	9.99917	0.76684	0.82960	0.06276	+ 3.255
Stockholm	+59 10 27	9.99893	0.66038	0.88461	0.22422	- 3.065
Sydney	-33 41 3	9.99955	0.87155	0.69536 _n	9.82381 _n	-90.584
Turin	+44 52 35	9.99928	0.80152	0.79965	9.99813	+ 3.741
Upsala (Neue Sternw.)	+59 41 31	9.99892	0.65373	0.88691	0.23318	- 2.779
Utrecht	+51 54 0	9.99910	0.74123	0.84686	0.10563	+ 5.429
Venedig	+45 14 19	9.99927	0.79876	0.80238	0.00362	+ 0.685
Vorgb. d. g. H.	-33 45 24	9.99955	0.87118	0.69618 _n	9.82500 _n	- 3.341
Warschau	+52 1 56	9.99910	0.73995	0.84764	0.10769	- 5.017
Washington	+38 42 24	9.99943	0.84354	0.74736	9.90382	+59.431
Wien	+48 1 9	9.99920	0.77637	0.82222	0.04585	- 1.961
Wien(Oppolzer)	+48 1 28	9.99920	0.77633	0.82226	0.04594	- 1.944
Wilna	+54 30 8	9.99904	0.71479	0.86156	0.14677	- 7.822

m.								
	0'	1'	2'	3'	4'	5'	6'	7'
"								
0	0''00	1''96	7''85	17''67	31''42	49''09	70''68	96''20
1	0.00	2.03	7.98	17.87	31.68	49.41	71.07	96.66
2	0.00	2.10	8.12	18.07	31.94	49.74	71.47	97.12
3	0.00	2.16	8.25	18.27	32.20	50.07	71.86	97.58
4	0.01	2.23	8.40	18.47	32.47	50.40	72.26	98.04
5	0.01	2.31	8.52	18.67	32.74	50.73	72.66	98.50
6	0.02	2.38	8.66	18.87	33.01	51.07	73.06	98.97
7	0.02	2.45	8.80	19.07	33.27	51.40	73.46	99.43
8	0.03	2.52	8.94	19.28	33.54	51.74	73.86	99.90
9	0.04	2.60	9.08	19.48	33.81	52.07	74.26	100.37
10	0.05	2.67	9.22	19.70	34.09	52.41	74.66	100.84
11	0.06	2.75	9.36	19.90	34.36	52.75	75.06	101.31
12	0.08	2.83	9.50	20.11	34.64	53.09	75.47	101.78
13	0.09	2.91	9.64	20.32	34.91	53.43	75.88	102.25
14	0.11	2.99	9.80	20.53	35.19	53.77	76.29	102.72
15	0.12	3.07	9.94	20.74	35.46	54.11	76.69	103.20
16	0.14	3.15	10.09	20.95	35.74	54.46	77.10	103.67
17	0.16	3.23	10.24	21.16	36.02	54.80	77.51	104.15
18	0.18	3.32	10.39	21.38	36.30	55.15	77.93	104.63
19	0.20	3.40	10.54	21.60	36.58	55.50	78.34	105.10
20	0.22	3.49	10.69	21.82	36.87	55.84	78.75	105.58
21	0.24	3.58	10.84	22.03	37.15	56.19	79.16	106.06
22	0.26	3.67	11.00	22.25	37.44	56.55	79.58	106.55
23	0.28	3.76	11.15	22.47	37.72	56.90	80.00	107.03
24	0.31	3.85	11.31	22.70	38.01	57.25	80.42	107.51
25	0.34	3.94	11.47	22.92	38.30	57.60	80.84	107.99
26	0.37	4.03	11.63	23.14	38.60	57.96	81.26	108.48
27	0.40	4.12	11.80	23.37	38.88	58.32	81.68	108.97
28	0.43	4.22	11.95	23.60	39.17	58.68	82.10	108.46
29	0.46	4.32	12.11	23.81	39.46	59.03	82.52	109.95
30	0.49	4.42	12.27	24.05	39.76	59.39	82.95	110.44
n.								
0"	0''00	0''00	0''00	0''00	0''00	0''01	0''01	0''02
10	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02
20	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.03
30	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.03

m.

	0'	1'	2'	3'	4'	5'	6'	7'
30	0"49	4"42	12"27	24"05	39"76	59"40	82"95	110"44
31	0.52	4.52	12.43	24.28	40.05	59.75	83.38	110.93
32	0.56	4.62	12.60	24.51	40.35	60.11	83.81	111.43
33	0.59	4.72	12.76	24.74	40.65	60.47	84.23	111.92
34	0.63	4.82	12.93	24.98	40.95	60.84	84.66	112.41
35	0.67	4.92	13.10	25.21	41.25	61.20	85.09	112.90
36	0.71	5.03	13.27	25.45	41.55	61.57	85.52	113.40
37	0.75	5.13	13.44	25.68	41.85	61.94	85.95	113.90
38	0.80	5.24	13.62	25.92	42.15	62.31	86.40	114.40
39	0.83	5.34	13.80	26.16	42.45	62.68	86.82	114.90
40	0.87	5.45	13.96	26.40	52.76	63.05	87.26	115.40
41	0.91	5.56	14.13	26.64	43.06	63.42	87.70	115.90
42	0.96	5.67	14.31	26.88	43.37	63.79	88.14	116.40
43	1.01	5.78	14.49	27.12	43.68	64.16	88.57	116.90
44	1.06	5.90	14.67	27.37	43.99	64.54	89.01	117.41
45	1.10	6.01	14.85	27.61	44.30	64.91	89.45	117.92
46	1.15	6.13	15.03	27.86	44.61	65.29	89.89	118.43
47	1.20	6.24	15.21	28.10	44.92	65.67	90.33	118.94
48	1.26	6.36	15.39	28.35	45.24	66.05	90.78	119.45
49	1.31	6.48	15.57	28.60	45.55	66.43	91.23	119.96
50	1.36	6.60	15.76	28.85	45.87	66.81	91.68	120.47
51	1.42	6.72	15.95	29.12	46.18	67.19	92.12	120.98
52	1.48	6.84	16.14	29.36	46.50	67.58	92.57	121.49
53	1.53	6.96	16.32	29.61	46.82	67.96	93.02	122.01
54	1.59	7.09	16.51	29.86	47.14	68.35	93.47	122.53
55	1.65	7.21	16.70	30.12	47.46	68.73	93.92	123.05
56	1.71	7.34	16.89	30.38	47.80	69.12	94.38	123.57
57	1.77	7.46	17.08	30.64	48.11	69.51	94.83	124.09
58	1.83	7.60	17.28	30.90	48.43	69.90	95.29	124.61
59	1.89	7.72	17.47	31.16	48.76	70.29	95.74	125.13
60	1.96	7.85	17.67	31.42	49.09	70.68	96.20	125.65

n.

30"	0"00	0"00	0"00	0"00	0"00	0"01	0"02	0"03
40	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.03
50	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.04
60	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.04

<i>m.</i>							
	8'	9'	10'	11'	12'	13'	14'
0	125.65	159.02	196.32	237.54	282.68	331.74	384.74
1	126.17	159.61	196.97	238.26	283.47	332.59	385.65
2	126.70	160.20	197.63	238.98	284.26	333.44	386.56
3	127.22	160.80	198.28	239.70	285.04	334.19	387.48
4	127.75	161.39	198.94	240.42	285.83	335.15	388.40
5	128.28	161.98	199.60	241.14	286.62	336.00	389.32
6	128.81	162.58	200.26	241.87	287.41	336.86	390.24
7	129.34	163.17	200.92	242.60	288.20	337.72	391.16
8	129.87	163.77	201.60	243.33	289.00	338.58	392.09
9	130.40	164.37	202.25	244.06	289.78	339.44	393.01
10	130.94	164.97	202.92	244.79	290.58	340.30	393.94
11	131.47	165.57	203.58	245.52	291.38	341.16	394.86
12	132.01	166.17	204.25	246.25	292.38	342.02	395.79
13	132.55	166.77	204.92	246.98	292.98	342.88	396.72
14	133.09	167.37	205.59	247.72	293.78	343.75	397.65
15	133.63	167.97	206.26	248.45	294.58	344.62	398.58
16	134.17	168.58	206.93	249.19	295.38	345.49	399.52
17	134.71	169.19	207.60	249.93	296.18	346.36	400.45
18	135.25	169.80	208.27	250.67	296.99	347.23	401.38
19	135.80	170.41	209.94	251.41	297.79	348.10	402.32
20	136.34	171.02	209.62	252.15	298.60	348.97	403.26
21	136.88	171.63	210.30	252.89	299.40	349.84	404.20
22	137.43	172.24	210.98	253.63	300.21	350.71	405.14
23	137.98	172.85	211.66	254.37	301.02	351.58	406.08
24	138.53	173.47	212.34	255.12	301.83	352.46	407.02
25	139.08	174.08	213.02	255.87	302.64	353.34	407.96
26	139.63	174.70	213.70	256.62	303.46	354.22	408.90
27	140.18	175.32	214.38	257.37	304.27	355.10	409.84
28	140.74	175.94	215.07	258.12	305.09	355.98	410.79
29	141.29	176.56	215.75	258.87	305.90	356.86	411.73
30	141.85	177.18	216.44	259.62	306.72	357.74	412.68
<i>n.</i>							
0"	0.04	0.06	0.09	0.14	0.19	0.27	0.36
10	0.04	0.07	0.10	0.15	0.20	0.28	0.38
20	0.05	0.07	0.11	0.15	0.22	0.30	0.39
30	0.05	0.08	0.11	0.16	0.23	0.31	0.41

m.

	8'	9'	10'	11'	12'	13'	14'
30	141"85	177"18	216"44	259"62	306"72	357"74	412"68
31	142.40	177.80	217.12	260.37	307.54	358.62	413.63
32	142.96	178.43	217.81	261.12	308.36	359.51	414.59
33	143.52	179.05	218.50	261.88	309.18	360.39	415.54
34	144.08	179.68	219.19	262.64	310.00	361.28	416.49
35	144.64	180.30	219.88	263.39	310.82	362.17	417.44
36	145.20	180.93	220.58	264.15	311.65	363.07	418.40
37	145.76	181.56	221.27	264.91	312.47	363.96	419.35
38	146.33	182.19	221.97	265.68	313.30	364.85	420.31
39	146.89	182.82	222.66	266.44	314.12	365.75	421.27
40	147.46	183.46	223.36	267.20	314.95	366.64	422.23
41	148.03	184.09	224.06	267.96	315.78	367.53	423.19
42	148.60	184.72	224.76	268.73	316.61	368.42	424.15
43	149.17	185.35	225.46	269.49	317.44	369.31	425.11
44	149.74	185.99	226.16	270.26	318.27	370.21	426.07
45	150.31	186.63	226.86	271.02	319.10	371.11	427.04
46	150.88	187.27	227.57	271.79	319.94	372.01	428.01
47	151.45	187.91	228.27	272.56	320.78	372.91	428.97
48	152.03	188.55	228.98	273.34	321.62	373.82	429.93
49	152.61	189.19	229.68	274.11	322.45	374.72	430.90
50	153.19	189.83	230.39	274.88	323.29	375.62	431.87
51	153.77	190.47	231.10	275.65	324.13	376.52	432.84
52	154.35	191.12	231.81	276.43	324.97	377.43	433.82
53	154.93	191.76	232.52	277.20	325.81	378.34	434.79
54	155.51	192.41	233.24	277.98	326.66	379.26	435.76
55	156.09	193.06	233.95	278.76	327.50	380.17	436.73
56	156.67	193.71	234.67	279.55	328.35	381.08	437.71
57	157.25	194.36	235.38	280.33	329.19	381.99	438.69
58	157.84	195.01	236.10	281.12	330.04	382.90	439.67
59	158.43	195.66	236.82	281.90	330.90	383.82	440.65
60	159.02	196.32	237.54	282.68	331.74	384.74	441.63

n.

	0"05	0"08	0"11	0"16	0"23	0"31	0"41
30"	0"05	0"08	0"11	0"16	0"23	0"31	0"41
40	0.05	0.08	0.12	0.17	0.24	0.33	0.43
50	0.06	0.09	0.13	0.18	0.25	0.34	0.45
60	0.06	0.09	0.14	0.19	0.26	0.36	0.47

<i>m.</i>							
	15'	16'	17'	18'	19'	20'	21'
0	441.6	502.5	567.2	635.9	708.4	784.9	865.3
1	442.6	503.5	568.3	637.0	709.7	786.2	866.6
2	443.6	504.6	569.4	638.2	710.9	787.5	868.0
3	444.6	505.6	570.5	639.4	712.1	788.8	869.4
4	445.6	506.7	571.6	640.6	713.4	790.1	870.8
5	446.5	507.7	572.8	641.7	714.6	791.4	872.1
6	447.5	508.8	573.9	642.9	715.9	792.7	873.5
7	448.5	509.8	575.0	644.1	717.1	794.0	874.9
8	449.5	510.9	576.1	645.3	718.4	795.4	876.3
9	450.5	511.9	577.2	646.5	719.6	796.7	877.6
10	451.5	513.0	578.4	647.7	720.9	798.0	879.0
11	452.5	514.0	579.5	648.9	722.1	799.3	880.4
12	453.5	515.1	580.6	650.0	723.4	800.7	881.8
13	454.5	516.1	581.7	651.2	724.6	802.0	883.2
14	455.5	517.2	582.9	652.4	725.9	803.3	884.6
15	456.5	518.3	584.0	653.6	727.2	804.6	886.0
16	457.5	519.3	585.1	654.8	728.4	806.0	887.4
17	458.5	520.4	586.2	656.0	729.7	807.3	888.8
18	459.5	521.5	587.4	657.2	730.9	808.6	890.2
19	460.5	522.5	588.5	658.4	732.2	809.9	891.6
20	461.5	523.6	589.6	659.6	733.5	811.3	893.0
21	462.5	524.6	590.8	660.8	734.7	812.6	894.4
22	463.5	525.7	591.9	662.0	736.0	813.9	895.8
23	464.5	526.8	593.0	663.2	737.3	815.2	897.2
24	465.5	527.9	594.2	664.4	738.5	816.6	898.6
25	466.5	528.9	595.2	665.6	739.8	817.9	900.0
26	467.5	530.0	596.5	666.8	741.1	819.2	901.4
27	468.5	531.1	597.6	668.0	742.3	820.5	902.8
28	469.5	532.2	598.7	669.2	743.6	821.9	904.2
29	470.5	533.2	599.9	670.4	744.9	823.2	905.6
30	471.5	534.3	601.0	671.6	746.2	824.6	907.0
<i>n.</i>							
0"	0"47	0"61	0"78	0"98	1"22	1"49	1"82
10	0.49	0.64	0.81	1.02	1.26	1.54	1.87
20	0.52	0.67	0.84	1.06	1.30	1.60	1.93
30	0.54	0.69	0.88	1.09	1.35	1.65	1.99

m.

	15'	16'	17'	18'	19'	20'	21'
30	471"5	534"3	601"0	671"6	746"2	824"6	907"0
31	472.6	535.4	602.2	672.8	747.4	825.9	908.4
32	473.6	536.5	603.3	674.1	748.7	827.3	909.8
33	474.6	537.6	604.5	675.3	750.0	828.6	911.2
34	475.6	538.7	605.6	676.5	751.3	829.9	912.6
35	476.6	539.7	606.8	677.7	752.6	831.2	914.0
36	477.6	540.8	607.9	678.9	753.8	832.6	915.5
37	478.7	541.9	609.1	680.1	755.1	833.9	916.9
38	479.7	543.0	610.2	681.3	756.4	835.3	918.3
39	480.7	544.1	611.4	682.6	757.7	836.6	919.7
40	481.7	545.2	612.5	683.8	759.0	838.0	921.1
41	482.8	546.3	613.7	685.0	760.2	839.3	922.5
42	483.8	547.4	614.8	686.2	761.5	840.7	923.9
43	484.8	548.4	616.0	687.4	762.8	842.0	925.3
44	485.8	549.5	617.2	688.7	764.1	843.4	926.8
45	486.9	550.6	618.3	689.9	765.4	844.7	928.2
46	487.9	551.7	619.5	691.1	766.7	846.1	929.6
47	488.9	552.8	620.6	692.4	768.0	847.5	931.0
48	490.0	553.9	621.8	693.6	769.3	848.9	932.4
49	491.0	555.0	623.0	694.8	770.6	850.2	933.8
50	492.0	556.1	624.1	696.0	771.9	851.6	935.2
51	493.1	557.2	625.3	697.3	773.1	852.9	936.6
52	494.1	558.3	626.5	698.5	774.5	854.3	938.1
53	495.2	559.4	627.6	699.7	775.8	855.6	939.5
54	496.2	560.5	628.8	701.0	777.1	857.1	940.9
55	497.2	561.6	630.0	702.2	778.4	858.4	942.3
56	498.3	562.7	631.2	703.5	779.7	859.8	943.8
57	499.3	563.9	632.3	704.7	781.0	861.1	945.2
58	500.3	565.0	633.5	705.9	782.3	862.5	946.6
59	501.4	566.1	634.7	707.1	783.6	863.9	948.1
60	502.5	567.2	635.9	708.3	784.9	865.3	949.6

n.

	30"	40"	50"	60"	1"09	1"35	1"65	1"99
30"	0"54	0"69	0"88	1"09	1"35	1"65	1"99	
40	0.56	0.72	0.91	1.13	1.40	1.70	2.06	
50	0.59	0.75	0.95	1.18	1.44	1.76	2.12	
60	0.61	0.78	0.98	1.22	1.49	1.82	2.19	

m.

	22'	23'	24'	25'	26'	27'	28'
"							
0	949".6	1037".8	1129".9	1225".9	1325".9	1429".7	1537".5
1	951.0	1039.3	1131.4	1227.5	1327.6	1431.4	1539.3
2	952.4	1040.8	1133.0	1229.2	1329.3	1433.2	1541.1
3	953.8	1042.3	1134.6	1230.8	1331.0	1434.9	1542.9
4	955.3	1043.8	1136.2	1232.5	1332.7	1436.7	1544.8
5	956.7	1045.3	1137.8	1234.1	1334.4	1438.5	1546.6
6	958.2	1046.8	1139.3	1235.7	1336.1	1440.3	1548.4
7	959.6	1048.3	1140.9	1237.3	1337.8	1442.1	1550.2
8	961.1	1049.8	1142.5	1239.0	1339.5	1443.9	1552.1
9	962.5	1051.3	1144.0	1240.6	1341.2	1445.6	1553.9
10	963.9	1052.8	1145.6	1242.3	1342.9	1447.4	1555.8
11	965.4	1054.3	1147.2	1243.9	1344.6	1449.2	1557.6
12	966.9	1055.9	1148.8	1245.6	1346.3	1451.0	1559.5
13	968.3	1057.4	1150.4	1247.2	1348.0	1452.8	1561.3
14	969.8	1058.9	1152.0	1248.9	1349.7	1454.5	1563.2
15	971.2	1060.4	1153.6	1250.5	1351.4	1456.3	1565.0
16	972.7	1062.0	1155.2	1252.2	1353.2	1458.1	1566.9
17	974.1	1063.5	1156.8	1253.8	1354.9	1459.9	1568.7
18	975.5	1065.0	1158.3	1255.5	1356.6	1461.6	1570.5
19	977.0	1066.5	1159.9	1257.1	1358.3	1463.4	1572.4
20	978.5	1068.1	1161.5	1258.8	1360.1	1465.2	1574.3
21	979.9	1069.6	1163.1	1260.4	1361.8	1466.9	1576.1
22	981.4	1071.1	1164.7	1262.1	1363.5	1468.7	1578.0
23	982.9	1072.6	1166.3	1263.7	1365.2	1470.5	1579.8
24	984.4	1074.2	1167.9	1265.4	1367.0	1472.3	1581.7
25	985.8	1075.7	1169.5	1267.0	1368.7	1474.0	1583.5
26	987.3	1077.2	1171.1	1268.7	1370.4	1475.9	1585.3
27	988.8	1078.7	1172.7	1270.3	1372.1	1477.7	1587.2
28	990.3	1080.3	1174.3	1272.1	1373.9	1479.5	1589.1
29	991.8	1081.8	1175.9	1273.7	1375.6	1481.3	1590.9
30	993.2	1083.3	1177.5	1275.4	1377.4	1483.1	1592.7

n.

0"	2"19	2"61	3"10	3"64	4"26	4"96	5"73
10	2.25	2.69	3.18	3.74	4.37	5.08	5.87
20	2.32	2.77	3.27	3.84	4.48	5.20	6.01
30	2.39	2.85	3.36	3.94	4.60	5.33	6.15

m.

	22'	23'	24'	25'	26'	27'	28'
30	993"2	1083"3	1177"5	1275"4	1377"4	1483"1	1592"7
31	994.7	1084.8	1179.1	1277.1	1379.0	1484.9	1594.6
32	996.2	1086.4	1180.7	1278.8	1380.8	1486.7	1596.5
33	997.6	1087.9	1182.3	1280.4	1382.5	1488.5	1598.3
34	999.1	1089.5	1183.9	1282.1	1384.2	1490.3	1600.2
35	1000.6	1091.0	1185.5	1283.8	1385.9	1492.1	1602.1
36	1002.1	1092.6	1187.1	1285.5	1387.7	1493.9	1604.0
37	1003.5	1094.1	1188.7	1287.1	1389.4	1495.7	1605.9
38	1005.0	1095.7	1190.3	1288.8	1391.2	1497.5	1607.7
39	1006.5	1097.2	1191.9	1290.5	1392.9	1499.3	1609.6
40	1008.0	1098.8	1193.5	1292.2	1394.7	1501.1	1611.5
41	1009.4	1100.3	1195.1	1293.8	1396.4	1502.9	1613.3
42	1010.9	1101.9	1196.7	1295.5	1398.2	1504.7	1615.2
43	1012.4	1103.4	1198.3	1297.2	1399.9	1506.5	1617.1
44	1013.9	1105.0	1199.9	1298.9	1401.7	1508.4	1619.0
45	1015.4	1106.5	1201.5	1300.5	1403.4	1510.2	1620.8
46	1016.9	1108.1	1203.1	1302.2	1405.2	1512.0	1622.7
47	1018.4	1109.6	1204.7	1303.9	1406.9	1513.8	1624.6
48	1019.9	1111.2	1206.4	1305.6	1408.7	1515.6	1626.5
49	1021.4	1112.7	1208.0	1307.3	1410.4	1517.4	1628.3
50	1022.8	1114.3	1209.6	1309.0	1412.2	1519.2	1630.2
51	1024.3	1115.8	1211.2	1310.7	1413.9	1521.0	1632.1
52	1025.8	1117.4	1212.9	1312.4	1415.7	1522.9	1634.0
53	1027.3	1118.9	1214.5	1314.1	1417.4	1524.7	1635.9
54	1028.8	1120.5	1216.1	1315.7	1419.2	1526.5	1637.7
55	1030.3	1122.0	1217.7	1317.4	1420.9	1528.3	1639.6
56	1031.8	1123.6	1219.4	1319.1	1422.7	1530.2	1641.5
57	1033.3	1125.1	1221.0	1320.8	1424.4	1532.0	1643.3
58	1034.8	1126.7	1222.6	1322.5	1426.2	1533.8	1645.2
59	1036.3	1128.3	1224.2	1324.2	1427.9	1535.6	1647.1
60	1037.8	1129.9	1225.9	1325.9	1429.7	1537.5	1649.0

n.

30"	2"39	2"85	3"36	3"94	4"60	5"33	6"15
40	2.46	2.93	3.45	4.05	4.72	5.46	6.30
50	2.54	3.01	3.55	4.15	4.83	5.60	6.44
60	2.61	3.10	3.64	4.26	4.96	5.73	6.59

m.

	29'	30'	31'	32'	33'	34'	35'
0	1649.0	1764.6	1884.0	2007.4	2134.6	2265.6	2400.6
1	1650.9	1766.6	1886.0	2009.4	2136.8	2267.8	2402.9
2	1652.8	1768.5	1888.0	2011.5	2138.9	2270.0	2405.2
3	1654.7	1770.5	1890.0	2013.6	2141.1	2272.2	2407.5
4	1656.6	1772.4	1892.1	2015.7	2143.2	2274.5	2409.8
5	1658.5	1774.4	1894.1	2017.8	2145.3	2276.7	2412.0
6	1660.4	1776.3	1896.1	2019.9	2147.5	2278.9	2414.3
7	1662.3	1778.3	1898.1	2022.0	2149.7	2281.2	2416.6
8	1664.2	1780.3	1900.2	2024.1	2151.8	2283.4	2418.9
9	1666.1	1782.3	1902.2	2026.2	2153.9	2285.6	2421.2
10	1668.0	1784.2	1904.3	2028.3	2156.1	2287.8	2423.5
11	1669.9	1786.2	1906.3	2030.5	2158.3	2290.0	2425.8
12	1671.9	1788.2	1908.4	2032.5	2160.5	2292.3	2428.1
13	1673.8	1790.1	1910.4	2034.6	2162.6	2294.5	2430.4
14	1675.7	1792.1	1912.4	2036.7	2164.8	2296.8	2432.7
15	1677.6	1794.1	1914.4	2038.8	2166.9	2299.0	2435.0
16	1679.5	1796.1	1916.5	2040.9	2169.1	2301.3	2437.3
17	1681.4	1798.1	1918.5	2043.0	2171.2	2303.6	2439.6
18	1683.3	1800.0	1920.6	2045.1	2173.4	2305.8	2441.9
19	1685.2	1802.0	1922.6	2047.2	2175.6	2308.0	2444.2
20	1687.2	1804.0	1924.7	2049.3	2177.8	2310.2	2446.5
21	1689.1	1805.9	1926.7	2051.4	2179.9	2312.4	2448.8
22	1691.0	1807.9	1928.8	2053.5	2182.1	2314.7	2451.1
23	1692.9	1809.9	1930.8	2055.7	2184.3	2316.9	2453.4
24	1694.8	1811.9	1932.9	2057.8	2186.5	2319.2	2455.7
25	1696.7	1813.9	1935.0	2059.9	2188.6	2321.5	2458.0
26	1698.6	1815.8	1937.0	2062.0	2190.8	2323.7	2460.3
27	1700.5	1817.8	1939.0	2064.1	2193.0	2325.9	2462.6
28	1702.5	1819.8	1941.1	2066.2	2195.2	2328.2	2464.9
29	1704.4	1821.8	1943.1	2068.3	2197.3	2330.4	2467.2
30	1706.3	1823.8	1945.2	2070.4	2199.5	2332.7	2469.5

n.

0"	6"59	7"55	8"61	9"77	11"04	12"44	13"97
10	6.75	7.62	8.79	9.97	11.27	12.69	14.24
20	6.90	7.89	8.98	10.18	11.50	12.94	14.51
30	7.06	8.06	9.17	10.39	11.73	13.19	14.78

m.

	29'	30'	31'	32'	33'	34'	35'
30	1706"3	1823"8	1945"2	2070"4	2199"5	2332"7	2469"5
31	1708.2	1825.8	1947.2	2072.6	2201.7	2334.9	2471.8
32	1710.2	1827.8	1949.3	2074.7	2203.9	2337.2	2474.2
33	1712.1	1829.8	1951.3	2076.8	2206.1	2339.4	2476.5
34	1714.0	1831.8	1953.4	2078.9	2208.3	2341.7	2478.8
35	1715.9	1833.8	1955.5	2081.0	2210.5	2343.9	2481.1
36	1717.9	1835.8	1957.6	2083.2	2212.7	2346.2	2483.5
37	1719.8	1837.8	1959.6	2085.3	2214.9	2348.5	2485.8
38	1721.7	1839.8	1961.7	2087.4	2217.1	2350.7	2488.1
39	1723.6	1841.8	1963.7	2089.6	2219.3	2353.0	2490.4
40	1725.6	1843.8	1965.8	2091.7	2221.5	2355.2	2492.8
41	1727.5	1845.8	1967.8	2093.8	2223.7	2357.5	2495.1
42	1729.5	1847.8	1969.9	2095.9	2225.9	2359.7	2497.4
43	1731.5	1849.8	1972.0	2098.0	2228.1	2361.9	2499.7
44	1733.4	1851.8	1974.1	2100.2	2230.3	2364.2	2502.1
45	1735.3	1853.8	1976.1	2102.3	2232.5	2366.4	2504.4
46	1737.2	1855.8	1978.2	2104.5	2234.7	2368.7	2506.7
47	1739.2	1857.8	1980.3	2106.6	2236.9	2371.0	2509.0
48	1741.2	1859.8	1982.4	2108.8	2239.1	2373.3	2511.4
49	1743.1	1861.8	1984.4	2110.9	2241.3	2375.5	2513.7
50	1745.1	1863.8	1986.5	2113.1	2243.5	2377.8	2516.1
51	1747.0	1865.8	1988.6	2115.2	2245.7	2380.1	2518.4
52	1749.0	1867.8	1990.7	2117.4	2247.9	2382.4	2520.8
53	1750.9	1869.8	1992.7	2119.6	2250.1	2384.6	2523.1
54	1752.9	1871.8	1994.8	2121.7	2252.3	2386.9	2525.4
55	1554.8	1873.8	1996.9	2123.8	2254.5	2389.2	2527.7
56	1756.8	1875.9	1999.0	2126.0	2256.7	2391.5	2530.1
57	1758.7	1877.9	2001.0	2128.1	2258.9	2393.7	2532.4
58	1760.7	1879.9	2003.1	2130.3	2261.1	2396.0	2534.8
59	1762.6	1882.0	2005.3	2132.4	2263.4	2398.3	2537.1
60	1764.6	1884.0	2007.4	2134.6	2265.6	2400.6	2539.5

n.

30'	7"06	8"06	9"17	10"39	11"73	13"19	14"78
40	7.22	8.24	9.37	10.61	11.96	13.45	15.06
50	7.38	8.42	9.57	10.82	12.20	13.71	15.35
60	7.55	8.61	9.77	11.04	12.24	13.97	15.63

<i>m.</i>						
	36'	37'	38'	39'	40'	41'
0	2539.5	2682.2	2828.8	2979.3	3133.6	3291.8
1	2541.8	2684.6	2831.3	2981.8	3136.2	3294.4
2	2544.2	2687.0	2833.7	2984.4	3138.8	3297.1
3	2546.5	2689.5	2836.2	2986.9	3141.4	3299.8
4	2548.9	2691.9	2838.7	2989.5	3144.0	3302.5
5	2551.2	2694.3	2841.2	2992.0	3146.6	3305.2
6	2553.5	2696.7	2843.6	2994.6	3149.2	3307.9
7	2555.9	2699.1	2846.1	2997.1	3151.8	3310.6
8	2558.3	2701.5	2848.6	2999.7	3154.4	3313.3
9	2560.6	2703.9	2851.1	3002.2	3157.0	3315.9
10	2563.0	2706.3	2853.6	3004.7	3159.7	3318.6
11	2565.3	2708.8	2856.1	3007.2	3162.4	3321.3
12	2567.7	2711.2	2858.6	3009.8	3165.0	3323.9
13	2570.1	2713.6	2861.1	3012.4	3167.6	3326.5
14	2572.4	2716.1	2863.5	3014.9	3170.2	3329.2
15	2574.8	2718.5	2866.0	3017.5	3172.8	3331.9
16	2577.1	2720.9	2868.5	3020.1	3175.4	3334.6
17	2579.5	2723.4	2871.0	3022.6	3178.0	3337.3
18	2581.9	2725.8	2873.5	3025.2	3180.6	3340.0
19	2584.2	2728.2	2876.0	3027.7	3183.3	3342.7
20	2586.6	2730.6	2878.5	3030.3	3185.9	3345.4
21	2589.0	2733.0	2881.0	3032.9	3188.6	3348.1
22	2591.3	2735.5	2883.5	3035.5	3191.2	3350.8
23	2593.7	2738.0	2886.0	3038.0	3193.8	3353.5
24	2596.1	2740.4	2888.5	3040.6	3196.4	3356.2
25	2598.5	2742.8	2891.0	3043.2	3199.0	3358.9
26	2600.8	2745.2	2893.5	3045.8	3201.7	3361.6
27	2603.2	2747.6	2896.0	3048.3	3204.3	3364.3
28	2605.6	2750.0	2898.5	3050.9	3206.9	3367.0
29	2607.9	2752.5	2901.0	3053.4	3209.5	3369.7
30	2610.2	2755.0	2903.6	3056.0	3212.2	3372.4
<i>n.</i>						
0"	15.63	17.44	19.40	21.52	23.80	26.27
10	15.92	17.75	19.74	21.88	24.20	26.70
20	16.22	18.08	20.09	22.26	24.61	27.13
30	16.52	18.40	20.44	22.64	25.01	27.57

m.

	36'	37'	38'	39'	40'	41'
"						
30	2610.2	2755.0	2903.6	3056.9	3212.2	3372.4
31	2612.7	2757.4	2906.1	3058.6	3214.9	3375.1
32	2615.1	2759.9	2908.6	3061.2	3217.5	3377.8
33	2617.5	2762.3	2911.1	3063.7	3220.2	3380.5
34	2619.8	2764.8	2913.6	3066.3	3222.8	3383.2
35	2622.2	2767.2	2916.1	3068.8	3225.5	3385.9
36	2624.6	2769.7	2918.6	3071.4	3228.1	3388.6
37	2627.0	2772.1	2921.1	3074.0	3230.8	3391.3
38	2629.4	2774.6	2923.6	3076.6	3233.4	3394.0
39	2631.8	2777.0	2926.1	3079.2	3236.1	3396.7
40	2634.2	2779.5	2928.7	3081.7	3238.7	3399.5
41	2636.6	2781.9	2931.2	3084.3	3241.4	3402.2
42	2639.0	2784.4	2933.7	3086.8	3244.0	3404.9
43	2641.4	2786.9	2936.3	3089.4	3246.7	3407.6
44	2643.8	2789.3	2938.8	3092.0	3249.3	3410.3
45	2646.2	2791.8	2941.3	3094.6	3252.0	3413.0
46	2648.5	2794.2	2943.9	3097.2	3254.6	3415.7
47	2650.9	2796.7	2946.4	3099.8	3257.3	3418.4
48	2653.3	2799.2	2948.9	3102.4	3259.9	3421.1
49	2655.7	2801.6	2951.4	3105.0	3262.6	3423.9
50	2658.1	2804.1	2953.9	3107.6	3265.2	3426.6
51	2660.5	2806.5	2956.4	3110.2	3267.9	3429.3
52	2662.9	2808.9	2959.0	3112.8	3270.5	3432.1
53	2665.3	2811.4	2961.5	3115.4	3273.2	3434.8
54	2667.7	2813.9	2964.1	3118.0	3275.8	3437.5
55	2670.1	2816.4	2966.6	3120.6	3278.5	3440.3
56	2672.5	2818.9	2969.2	3123.2	3281.1	3443.0
57	2674.9	2821.3	2971.7	3125.8	3283.8	3445.7
58	2677.3	2823.8	2974.3	3128.4	3286.5	3448.5
59	2679.7	2826.3	2976.8	3131.0	3289.1	3451.2
60	2682.2	2828.8	2979.3	3133.6	3291.8	3453.9

n.

30"	16.52	18.40	20.44	22.64	25.01	27.57
40	16.82	18.72	20.79	23.02	25.36	28.01
50	17.13	19.06	21.15	23.41	25.84	28.46
60	17.44	19.40	21.52	23.80	26.27	28.92

log. m.

	0'	1'	2'	3'	4'
"	— ∞	0.29303	0.89509	1.24707	1.49714
0	6.73673	30739	90230	25208	50076
1	7.33879	32151	90945	25687	50435
2	7.69097	33541	91654	26163	50793
3	7.94085	34909	92357	26636	51150
4	8.13467	36256	93055	27107	51505
5					
6	8.29303	37582	93747	27575	51859
7	8.42693	38888	94434	28041	52211
8	8.54291	40175	95115	28904	52562
9	8.64512	41444	95791	28965	52912
10	8.73673	42693	96462	29423	53260
11	8.81952	43925	97127	29879	53608
12	8.89509	45140	97788	30333	53952
13	8.96462	46338	98443	30784	54296
14	9.02899	47519	99094	31233	54639
15	9.08891	46685	99740	31679	54980
16	9.14497	49836	1.00381	32124	55320
17	9.19763	50971	01017	32566	55659
18	9.24628	52092	01649	33006	55996
19	9.29424	53198	02276	33443	56332
20	9.33879	54291	02898	33878	56667
21	9.38117	55370	03517	34312	57000
22	9.42158	56436	04131	34743	57332
23	9.46019	57489	04740	35172	57663
24	9.49715	58529	05345	35598	57993
25	9.53261	59557	05946	36022	58322
26	9.56668	60573	06543	36446	58648
27	9.59946	61577	07136	36866	58974
28	9.63105	62570	07725	37285	59299
29	9.66153	63551	08310	37702	59622
30	9.69097	64522	08891	38116	59945

log. m.

	0'	1'	2'	3'	4'
30	9.69097	0.64522	1.08891	1.38116	1.59945
31	9.71946	65481	09468	38529	60266
32	9.74703	66431	10042	38940	60586
33	9.77376	67370	10611	39348	60904
34	9.79969	68299	11177	39755	61222
35	9.82487	69218	11739	40160	61538
36	9.84934	70127	12298	40563	61854
37	9.87314	71027	12853	40964	62168
38	9.89630	71918	13404	41364	62481
39	9.91886	72800	13952	41761	62793
40	9.94085	73673	14497	42157	63103
41	9.96230	74537	15038	42551	63413
42	9.98323	75394	15576	42943	63722
43	0.00367	76240	16110	43333	64029
44	0.02364	77080	16641	43722	64335
45	0.04316	77911	17169	44109	64641
46	0.06225	78734	17694	44494	64945
47	0.08093	79550	18216	44877	65248
48	0.09921	80358	18735	45259	65550
49	0.11712	81158	19250	45639	65851
50	0.13467	81952	19762	46018	66151
51	0.15187	82738	20272	46395	66450
52	0.16874	83517	20778	46770	66748
53	0.18528	84290	21282	47143	67045
54	0.20152	85054	21782	47515	67341
55	0.21746	85813	22280	47886	67636
56	0.23311	86513	22775	48255	67930
57	0.24848	87310	23267	48622	68223
58	0.26359	88049	23757	48988	68515
59	0.27844	88782	24243	49352	68806
60	0.29303	89509	24727	49714	69096

log. m.

	5'	6'	7'	8'	9'
"					
0	1.69096	1.84931	1.98320	2.09917	2.20146
1	69385	85172	98526	10098	20307
2	69673	85412	98732	10278	20467
3	69960	85651	98937	10458	20627
4	70246	85891	99142	10637	20787
5	70531	86129	99347	10817	20946
6	70816	86366	99551	10995	21106
7	71099	86603	99755	11174	21264
8	71382	86840	99958	11352	21423
9	71663	87075	2.00161	11530	21581
10	71944	87310	00363	11707	21740
11	72223	87545	00565	11884	21897
12	72502	87779	00766	12061	22055
13	72780	88012	00967	12237	22192
14	73057	88244	01167	12413	22369
15	73333	88476	01367	12590	22522
16	73609	88708	01566	12764	22682
17	73883	88938	01765	12939	22838
18	74157	89168	01964	13114	22994
19	74429	89398	02162	13288	23150
20	74701	89627	02360	13462	23304
21	74972	89855	02557	13635	23460
22	75242	90083	02753	13809	23614
23	75511	90310	02950	13982	23768
24	75780	90536	03146	14154	23922
25	76048	90762	03341	14326	24076
26	76314	90986	03536	14498	24230
27	76580	91212	03730	14670	24383
28	76846	91436	03925	14841	24536
29	77110	91660	04119	15011	24689
30	77373	91883	04311	15182	24842

log. m.

	5'	6'	7'	8'	9'
30	1.77373	1.91883	2.04311	2.15182	2.24842
31	77636	92105	04504	15352	24994
32	77898	92327	04697	15522	25146
33	78160	92548	04888	15691	25297
34	78420	92769	05080	15860	25449
35	78680	92990	05271	16030	25600
36	78928	93209	05462	16198	25751
37	79167	93428	05652	16366	25902
38	79454	93646	05842	16534	26052
39	79707	93864	06031	16701	26202
40	79967	94082	06220	16868	26352
41	80221	94299	06409	17035	26501
42	80476	94515	06597	17202	26651
43	80730	94731	06785	17368	26800
44	80982	94946	06972	17534	26949
45	81234	95161	07160	17700	27097
46	81486	95375	07346	17865	27246
47	81736	95589	07532	18030	27394
48	81986	95802	07718	18194	27542
49	82236	96016	07903	18359	27690
50	82484	96226	08089	18523	27836
51	82732	96438	08273	18687	27984
52	82979	96649	08457	18850	28130
53	83225	96860	08648	19013	28277
54	83471	97070	08824	19176	28423
55	83716	97279	09007	19338	28570
56	83960	97488	09190	19500	28715
57	84204	97697	09372	19662	28861
58	84447	97905	09554	19824	29006
59	84690	98112	09735	19985	29151
60	84931	98320	09917	20146	29296

log. m.

	10'	11'	12'	13'	14'
0	2.29296	2.37574	2.45130	2.52081	2.58516
1	29441	37705	45250	52192	58619
2	29586	37836	45371	52303	58722
3	29730	37968	45491	52414	58825
4	29874	38098	45611	52525	58928
5	30017	38229	45731	52635	59031
6	30161	38360	45850	52746	59134
7	30304	38490	45970	52856	59236
8	30447	38620	46089	52967	59339
9	30590	38750	46209	53077	59441
10	30732	38880	46328	53187	59543
11	30874	39009	46446	53297	59645
12	31016	39138	46565	53406	59747
13	31158	39268	46684	53516	59849
14	31300	39397	46802	53625	59951
15	31441	39525	46920	53735	60052
16	31582	39654	47038	53844	60154
17	31723	39782	47156	53953	60255
18	31864	39910	47274	54062	60357
19	32004	40038	47392	54170	60458
20	32114	40166	47509	54279	60559
21	32284	40294	47626	54387	60660
22	32424	40421	47743	54496	60760
23	32563	40548	47860	54604	60861
24	32703	40675	47977	54712	60962
25	32842	40802	48094	54820	61062
26	32941	40929	48210	54928	61162
27	33019	41056	48327	55035	61263
28	33258	41172	48443	55143	61363
29	33396	41308	48559	55250	61463
30	33534	41434	48675	55358	61563

log. n.

0"	8.97048	9.13602	9.28712	9.42616	9.55486
10	8.99918	9.16214	9.31110	9.44828	9.57540
20	9.02742	9.18786	9.33472	9.47012	9.59572
30	9.05522	9.21322	9.35804	9.49170	9.61580

log. m.

	10'	11'	12'	13'	14'
30	2.33534	2.41434	2.48675	2.55358	2.61563
31	33671	41560	48790	55465	61662
32	33809	41685	48906	55572	61762
33	33946	41811	49021	55679	61861
34	34083	41936	49137	55785	61961
35	34220	42061	49253	55892	62060
36	34357	42186	49367	55999	62159
37	34493	42310	49481	56105	62258
38	34630	42435	49596	56211	62357
39	34766	42559	49711	56317	62456
40	34901	42683	49825	56423	62555
41	35037	42807	49939	56529	62654
42	35172	42931	50053	56635	62752
43	35308	43055	50167	56740	62850
44	35442	43178	50281	56846	62949
45	35577	43302	50394	56951	63047
46	35712	43425	50508	57056	63145
47	35846	43548	50621	57161	63243
48	35980	43670	50734	57266	63341
49	36114	43793	50847	57371	63438
50	36248	43915	50960	57476	63536
51	36381	44037	51073	57580	63634
52	36515	44160	51185	57685	63731
53	36648	44281	51298	57789	63828
54	36781	44403	51410	57893	63925
55	36913	44525	51522	57997	64023
56	37046	44646	51634	58101	64119
57	37178	44767	51746	58205	64216
58	37310	44888	51858	58309	64313
59	37442	45009	51969	58412	64410
60	37574	45130	52081	58516	64506

log. n.

30"	9.05522	9.21322	9.35804	9.49170	9.61580
40	9.08256	9.23820	9.38104	9.51300	9.63564
50	9.10950	9.26284	9.40374	9.53406	9.65526
60	9.13602	9.28712	9.42616	9.55486	9.67466

<i>log. m.</i>					
	15'	16'	17'	18'	19'
0	2.64506	2.70110	2.75373	2.80336	2.85029
1	64603	70200	75458	80416	85105
2	64699	70291	75543	80496	85181
3	64795	70381	75628	80576	85257
4	64891	70471	75713	80656	85333
5	64987	70561	75798	80736	85409
6	65083	70651	75883	80816	85485
7	65179	70741	75967	80896	85561
8	65275	70830	76052	80976	85636
9	65370	70920	76136	81056	85712
10	65466	71010	76220	81135	85787
11	65561	71069	76305	81215	85863
12	65656	71188	76389	81295	85938
13	65751	71278	76476	81375	86014
14	65846	71367	76557	81454	86089
15	65941	71456	76641	81533	86164
16	66036	71545	76725	81612	86239
17	66131	71634	76808	81691	86314
18	66226	71723	76892	81770	86389
19	66320	71811	76976	81849	86464
20	66415	71900	77059	81928	86539
21	66509	71989	77143	82007	86614
22	66603	72077	77226	82086	86689
23	66697	72165	77309	82165	86763
24	66791	72254	77392	82244	86838
25	66885	72342	77476	82322	86912
26	66979	72430	77559	82401	86987
27	67073	72518	77642	82479	87061
28	67166	72606	77724	82558	87136
29	67260	72694	77807	82636	87210
30	67353	72781	77890	82714	87284
<i>log. n.</i>					
0"	9.67466	9.78674	9.89200	9.99126	0.08512
10	9.69386	9.80474	9.90894	0.00724	0.10028
20	9.71284	9.82254	9.92572	0.02310	0.11532
30	9.73160	9.84016	9.94234	0.03882	0.13022

log. m.

	15'	16'	17'	18'	19'
30	2.67353	2.72781	2.77890	2.82714	2.87284
31	67447	72869	77973	82792	87358
32	67540	72957	78056	82870	87432
33	67633	73044	78138	82948	87506
34	67726	73132	78220	83026	87580
35	67820	73219	78302	83104	87654
36	67912	73306	78385	83182	87728
37	68004	73393	78467	83260	87802
38	68097	73480	78549	83337	87876
39	68189	73567	78631	83414	87949
40	68282	73654	78713	83492	88023
41	68374	73741	78795	83570	88096
42	68466	73827	78877	83648	88170
43	68559	73914	78958	83725	88243
44	68651	74001	79040	83802	88317
45	68742	74087	79121	83879	88390
46	68834	74173	79203	83957	88463
47	68926	74259	79284	84034	88536
48	69018	74346	79366	84111	88600
49	69109	74432	79447	84188	88683
50	69201	74518	79528	84264	88756
51	69292	74604	79609	84341	88828
52	69383	74690	79690	84418	88901
53	69474	74775	79771	84495	88974
54	69565	74861	79852	84571	89047
55	69656	74947	79933	84648	89119
56	69747	75032	80014	84724	89192
57	69838	75118	80094	84801	89265
58	69929	75203	80175	84877	89337
59	70019	75288	80255	84953	89410
60	70110	75373	80336	85029	89482

log. n.

30'	9.73160	9.84016	9.94234	0.03882	0.13022
40	9.75018	9.85762	9.95880	0.05438	0.14500
50	9.76856	9.87490	9.97510	0.06982	0.15966
60	9.78674	9.89200	9.99126	0.08512	0.17418

<i>log. m.</i>					
	20'	21'	22'	23'	24'
"					
0	2.89482	2.93717	2.97755	3.01613	3.05306
1	89554	93786	97820	01675	05366
2	89626	93855	97886	01738	05426
3	89699	93923	97952	01801	05487
4	89771	93992	98017	01864	05547
5	89833	94061	98083	01926	05607
6	89915	94129	98148	01989	05667
7	89987	94198	98214	02052	05727
8	90059	94266	98279	02114	05787
9	90130	94335	98344	02177	05847
10	90202	94403	98410	02239	05907
11	90274	94471	98475	02302	05966
12	90346	94540	98540	02364	06026
13	90417	94608	98605	02426	06086
14	90489	94676	98670	02489	06146
15	90560	94744	98735	02551	06205
16	90632	94812	98800	02613	06265
17	90703	94880	98865	02675	06324
18	90774	94948	98930	02737	06384
19	90845	95016	98995	02799	06444
20	90917	95084	99060	02861	06503
21	90988	95152	99125	02923	06562
22	91059	95219	99189	02985	06622
23	91130	95287	99254	03047	06681
24	91201	95355	99319	03109	06740
25	91273	95422	99383	03171	06800
26	91343	95490	99448	03232	06859
27	91413	95557	99512	03294	06918
28	91484	95625	99576	03356	06977
29	91555	95692	99641	03417	07036
30	91625	95759	99705	03479	07095
<i>log. n.</i>					
0"	0.17418	0.25888	0.33964	0.41680	0.49066
10	0.18858	0.27260	0.35274	0.42932	0.50268
20	0.20288	0.28622	0.36574	0.44176	0.51460
30	0.21704	0.29972	0.37864	0.45412	0.52644

log. m.

	20'	21'	22'	23'	24'
30	2.91625	2.95759	2.99705	3.03476	3.07095
31	91696	95827	99769	03539	07154
32	91766	95894	99834	03602	07213
33	91837	95961	99898	03663	07272
34	91907	96028	99962	03725	07331
35	91977	96095	3.00026	03787	07389
36	92048	96162	00090	03848	07449
37	92118	96229	00154	03909	07508
38	92188	96296	00218	03970	07567
39	92258	96362	00282	04031	07625
40	92328	96429	00346	04092	07684
41	92398	96496	00409	04153	07742
42	92468	96563	00473	04214	07801
43	92538	96630	00537	04275	07859
44	92608	96696	00600	04336	07918
45	92677	96763	00664	04397	07976
46	92747	96829	00728	04458	08035
47	92817	96896	00791	04519	08094
48	92886	96962	00855	04580	08152
49	92956	97028	00918	04641	08210
50	93026	77095	00981	04701	08268
51	93096	97161	01045	04762	08326
52	93164	97227	01108	04823	08384
53	93233	97293	01171	04883	08442
54	93303	97359	01234	04944	08501
55	93372	97425	01298	05004	08559
56	93441	97491	01361	05065	08617
57	93510	97557	01424	05125	08675
58	93579	97623	01487	05185	08733
59	93648	97689	01550	05246	08791
60	93717	97755	01613	05306	08848

log. n.

30	0.21704	0.29972	0.37864	0.45412	0.52644
40	0.23110	0.31312	0.39146	0.46638	0.53822
50	0.24504	0.32644	0.40416	0.47856	0.54990
60	0.25888	0.33964	0.41680	0.49066	0.56150

<i>log. m.</i>					
	25'	26'	27'	28'	29'
"					
0	3.08848	3.12252	3.15526	3.18681	3.21725
1	08906	12307	15580	18733	21775
2	08964	12363	15633	18784	21825
3	09022	12418	15686	18836	21875
4	09079	12474	15740	18887	21924
5	09137	12529	15793	18939	21974
6	09195	12585	15847	18990	22024
7	09252	12640	15900	19042	22073
8	09310	12695	15953	19093	22123
9	09367	12751	16007	19145	22172
10	09425	12806	16060	19196	22222
11	09482	12861	16113	19247	22272
12	09540	12916	16166	19299	22321
13	09597	12972	16220	19350	22371
14	09655	13027	16273	19401	22420
15	09712	13082	16326	19452	22470
16	09769	13137	16379	19503	22519
17	09826	13192	16432	19554	22568
18	09883	13247	16485	19606	22618
19	09941	13302	16538	19657	22667
20	09998	13357	16591	19708	22716
21	10055	13412	16643	19759	22766
22	10112	13467	16696	19810	22815
23	10169	13521	16749	19861	22864
24	10226	13576	16802	19912	22913
25	10283	13631	16855	19962	22963
26	10340	13686	16907	20013	23012
27	10396	13740	16960	20064	23061
28	10453	13795	17013	20115	23110
29	10510	13850	17066	20166	23159
30	10567	13904	17118	20216	23208
<i>log. n.</i>					
0"	0.56150	0.62958	0.69506	0.75816	0.81904
10	0.57304	0.64066	0.70574	0.76846	0.82898
20	0.58450	0.65168	0.71636	0.77870	0.83886
30	0.59588	0.66262	0.72690	0.78886	0.84870

log. m.

	25'	26'	27'	28'	29'
"					
30	3.10567	3.13904	3.17118	3.20216	3.23208
31	10623	13959	17170	20267	23257
32	10680	14013	17223	20318	23306
33	10737	14068	17275	20369	23355
34	10793	14122	17327	20419	23404
35	10850	14177	17380	20470	23453
36	10906	14231	17433	20520	23501
37	10963	14285	17485	20571	23550
38	11019	14340	17538	20621	23599
39	11076	14394	17590	20672	23648
40	11132	14448	17642	20722	23697
41	11188	14502	17694	20772	23745
42	11245	14557	17746	20822	23794
43	11301	14611	17799	20873	23843
44	11357	14665	17851	20924	23891
45	11413	14719	17903	20974	23940
46	11469	14773	17955	21024	23988
47	11525	14827	18007	21075	24037
48	11582	14881	18059	21125	24086
49	11638	14935	18111	21175	24134
50	11694	14989	18163	21225	24182
51	11750	15043	18215	21275	24231
52	11805	15096	18267	21325	24279
53	11861	15150	18319	21375	24328
54	11917	15204	18371	21425	24376
55	11973	15258	18422	21475	24424
56	12029	15312	18474	21525	24473
57	12085	15365	18526	21575	24521
58	12140	15419	18578	21625	24569
59	12196	15472	18629	21675	24617
60	12252	15526	18681	21725	24666

log. n.

30"	0.59588	0.66262	0.72690	0.78886	0.84870
40	0.60718	0.67350	0.73738	0.79898	0.85848
50	0.61842	0.68432	0.74780	0.80904	0.86818
60	0.62958	0.69506	0.75816	0.81904	0.87885

<i>log. m.</i>					
	30'	31'	32'	33'	34'
"					
0	3.24665	3.27509	3.30262	3.32931	3.35519
1	24713	27556	30308	32975	35562
2	24762	27602	30353	33018	35604
3	24810	27649	30398	33062	35647
4	24858	27695	30443	33106	35689
5	24906	27742	30488	33149	35731
6	24954	27788	30533	33193	35774
7	25002	27835	30578	33237	35816
8	25050	27881	30622	33280	35858
9	25098	27928	30668	33324	35901
10	25146	27974	30713	33368	35943
11	25194	28021	30758	33411	35985
12	25242	28067	30803	33455	36028
13	25289	28113	30848	33498	36070
14	25337	28159	30892	33542	36112
15	25385	28206	30937	33585	36154
16	25433	28252	30982	33629	36196
17	25481	28298	31027	33672	36239
18	25528	28344	31072	33715	36281
19	25576	28391	31116	33759	36323
20	25624	38437	31161	33802	36365
21	25671	28483	31206	33846	36407
22	25719	28529	31250	33889	36449
23	25767	28575	31295	33932	36491
24	25814	28621	31340	33975	36533
25	25862	28667	31384	34019	36575
26	25909	28713	31429	34062	36617
27	25956	28759	31473	34105	36659
28	26004	28805	31518	34148	36701
29	26051	28851	31562	34192	36743
30	26099	28897	31607	34235	36785
<i>log. n.</i>					
"					
0	0.87885	0.93473	0.98979	1.04316	1.09493
10	0.88746	0.94402	0.99879	1.05190	1.10341
20	0.89702	0.95328	1.00777	1.06059	1.11184
30	0.90652	0.96248	1.01668	1.06924	1.12024

log. m.

	30'	31'	32'	33'	34'
"					
30	3.26099	3.28897	3.31607	3.34235	3.36785
31	26146	28943	31651	34278	36827
32	26194	28988	31696	34321	36868
33	26241	29034	31740	34364	36910
34	26288	29080	31785	34407	36952
35	26336	29126	31829	34450	36994
36	26383	29172	31873	34493	37036
37	26430	29217	31918	34536	37077
38	26477	29263	31962	34579	37119
39	26524	29309	32006	34622	37161
40	26572	29354	32050	34665	37203
41	26619	29400	32095	34708	37244
42	26666	29446	32139	34751	37286
43	26713	29491	32183	34794	37328
44	26760	29537	32227	34836	37369
45	26807	29582	32271	34879	37411
46	26854	29628	32315	34922	37452
47	26901	29673	32360	34965	37494
48	26948	29719	32404	35008	37535
49	26995	29764	32448	35050	37577
50	27042	29810	32492	35093	37618
51	27088	29855	32536	35136	37660
52	27135	29900	32580	35178	37701
53	27182	29946	32624	35221	37743
54	27229	29991	32668	35264	37784
55	27276	30036	32712	35306	37826
56	27322	30082	32755	35349	37867
57	27369	30127	32799	35392	37908
58	27416	30172	32843	35434	37950
59	27463	30217	32887	35477	37991
60	27509	30262	32931	35520	38032

log. n.

30"	0.90652	0.96248	1.01668	1.06924	1.12024
40	0.91598	0.97163	1.02555	1.07784	1.12860
50	0.92538	0.98074	1.03438	1.08641	1.13691
60	0.93473	0.98979	1.04316	1.09493	1.14519

log. m.

	35'	36'	37'	38'	39'
"					
0	3.38032	3.40474	3.42849	3.45160	3.47411
1	38073	40514	42888	45198	47448
2	38115	40554	42927	45236	47485
3	38156	40595	42965	45274	47522
4	38197	40635	43004	45312	47559
5	38238	40675	43044	45350	47596
6	38280	40715	43083	45388	47633
7	38321	40755	43122	45426	47670
8	38362	40795	43161	45464	47707
9	38403	40835	43200	45502	47744
10	38444	40875	43239	45539	47781
11	38485	40915	43277	45577	47817
12	38526	40955	43316	45615	47854
13	38567	40995	43355	45653	47891
14	38608	41034	43394	45691	47927
15	38649	41074	43433	45728	47965
16	38690	41114	43471	45766	48002
17	38731	41154	43510	45804	48038
18	38772	41194	43549	45842	48075
19	38813	41233	43588	45879	48112
20	38854	41273	43626	45917	48149
21	38895	41313	43665	45955	48185
22	38936	41353	43704	45992	48222
23	38976	41392	43742	56030	48259
24	39017	41432	43781	46068	48295
25	39058	41472	43820	46105	48332
26	39099	41511	43858	46143	48369
27	39140	41551	43897	46180	48405
28	39180	41591	43935	46218	48442
29	39221	41630	43974	46255	48478
30	39262	41670	44012	46293	48515

log. n.

0"	1.14519	1.19403	1.24152	1.28775	1.33277
10	1.15343	1.20204	1.24902	1.29533	1.34016
20	1.16162	1.21001	1.25707	1.30289	1.34752
30	1.16978	1.21794	1.26479	1.31041	1.35484

log. m.

	35'	36'	37'	38'	39'
30	3.39262	3.41670	3.44012	3.46293	3.48515
31	39303	41709	44051	46331	48551
32	39343	41749	44089	46368	48588
33	39384	41788	44128	46405	48625
34	39424	41828	44166	46443	48661
35	39465	41867	44205	46480	48698
36	39506	41907	44243	46518	48734
37	39546	41946	44282	46555	48770
38	39587	41986	44320	46593	48807
39	39627	42025	44358	46630	48843
40	39668	42065	44397	46667	48880
41	39708	42104	44435	46705	48916
42	39749	42143	44473	46742	48953
43	39789	42183	44512	46779	48989
44	39830	42222	44550	46817	49025
45	39870	42261	44588	46854	49062
46	39911	42301	44626	46891	49098
47	39951	42340	44665	46928	49134
48	39991	42379	44703	46966	49170
49	40032	42419	44741	47003	49207
50	40072	42458	44779	47040	49243
51	40112	42497	44817	47077	49279
52	40153	42536	44856	47114	49315
53	40193	42575	44894	47152	49352
54	40233	42614	44932	47189	49388
55	40273	42654	44970	47226	49424
56	40314	42693	45008	47263	49460
57	40354	42732	45046	47300	49496
58	40394	42771	45084	47337	49533
59	40434	42810	45122	47374	49569
60	40474	42849	45160	47411	49605

log. n.

30"	1.16978	1.21794	1.26479	1.31041	1.35484
40	1.17790	1.22584	1.27248	1.31789	1.36214
50	1.18598	1.23380	1.28013	1.32535	1.36941
60	1.19403	1.24152	1.28775	1.33277	1.37664

log. m.

<i>40'</i>		<i>41'</i>		<i>40'</i>		<i>41'</i>	
"				"			
0	3.49605	3.51744		30	3.50681	3.52794	
1	49641	51779		31	50717	52829	
2	49677	51814		32	50752	52863	
3	49713	51849		33	50788	52898	
4	49749	51885		34	50823	52933	
5	49785	51920		35	50859	52968	
6	49821	51955		36	50895	53002	
7	49857	51990		37	50930	53037	
8	49893	52025		38	50966	53072	
9	49929	52060		39	51001	53106	
10	49965	52095		40	51037	53141	
11	50001	52130		41	51072	53176	
12	50037	52165		42	51108	53210	
13	50073	52201		43	51143	53245	
14	50109	52236		44	51179	53280	
15	50145	52271		45	51214	53314	
16	50180	52306		46	51250	53349	
17	50216	52341		47	51285	53383	
18	50252	52375		48	51320	53418	
19	50288	52410		49	51356	53452	
20	50324	52445		50	51391	53487	
21	50360	52480		51	51426	53521	
22	50395	52515		52	51462	53556	
23	50431	52550		53	51497	53590	
24	50467	52585		54	51532	53625	
25	50503	52620		55	51568	53659	
26	50538	52655		56	51603	53694	
27	50574	52690		57	51638	53728	
28	50610	52724		58	51673	53763	
29	50645	52759		59	51709	53797	
30	50681	52794		60	51744	53831	

log. n.

<i>0"</i>			<i>30"</i>		
0	1.37664	1.41942	30	1.39716	1.44042
10	1.38384	1.42645	40	1.40428	1.44737
20	1.39102	1.43345	50	1.41237	1.45428
30	1.39816	1.44042	60	1.41942	1.46117

Argument: Halbe Zwischenzeit.

Arg.	log. A	log. B	Arg.	log. A	log. B	Arg.	log. A	log. B
oh 1'	7.7247	7.7247	oh 41'	7.7270	7.7200	1h 21'	7.7338	7.7061
2	7.7247	7.7247	42	7.7271	7.7198	22	7.7340	7.7056
3	7.7247	7.7247	43	7.7272	7.7196	23	7.7342	7.7051
4	7.7247	7.7247	44	7.7274	7.7193	24	7.7345	7.7046
5	7.7247	7.7246	45	7.7275	7.7191	25	7.7347	7.7041
6	7.7247	7.7246	46	7.7276	7.7188	26	7.7349	7.7036
7	7.7248	7.7246	47	7.7277	7.7186	27	7.7352	7.7031
8	7.7248	7.7245	48	7.7279	7.7183	28	7.7354	7.7026
9	7.7248	7.7245	49	7.7280	7.7180	29	7.7357	7.7021
10	7.7248	7.7244	50	7.7281	7.7177	30	7.7359	7.7015
11	7.7249	7.7244	51	7.7283	7.7174	31	7.7362	7.7010
12	7.7249	7.7243	52	7.7284	7.7172	32	7.7364	7.7005
13	7.7249	7.7242	53	7.7286	7.7169	33	7.7367	7.6999
14	7.7250	7.7242	54	7.7287	7.7166	34	7.7369	7.6993
15	7.7250	7.7241	55	7.7289	7.7162	35	7.7372	7.6988
16	7.7251	7.7240	56	7.7290	7.7159	36	7.7374	7.6982
17	7.7251	7.7239	57	7.7292	7.7156	37	7.7377	7.6976
18	7.7252	7.7238	58	7.7293	7.7153	38	7.7380	7.6970
19	7.7252	7.7237	59	7.7295	7.7150	39	7.7383	7.6964
20	7.7253	7.7236	I 0	7.7297	7.7146	40	7.7386	7.6958
21	7.7253	7.7235	1	7.7298	7.7143	41	7.7388	7.6952
22	7.7254	7.7234	2	7.7300	7.7139	42	7.7391	7.6946
23	7.7254	7.7232	3	7.7302	7.7136	43	7.7394	7.6940
24	7.7255	7.7231	4	7.7304	7.7132	44	7.7397	7.6934
25	7.7256	7.7230	5	7.7305	7.7128	45	7.7400	7.6927
26	7.7256	7.7228	6	7.7307	7.7125	46	7.7403	7.6921
27	7.7257	7.7227	7	7.7309	7.7121	47	7.7406	7.6914
28	7.7258	7.7225	8	7.7311	7.7117	48	7.7409	7.6908
29	7.7259	7.7224	9	7.7313	7.7113	49	7.7412	7.6901
30	7.7259	7.7222	10	7.7315	7.7109	50	7.7415	7.6894
31	7.7260	7.7220	11	7.7317	7.7105	51	7.7418	7.6888
32	7.7261	7.7219	12	7.7319	7.7101	52	7.7421	7.6881
33	7.7262	7.7217	13	7.7321	7.7097	53	7.7424	7.6874
34	7.7263	7.7215	14	7.7323	7.7092	54	7.7428	7.6867
35	7.7264	7.7213	15	7.7325	7.7088	55	7.7431	7.6859
36	7.7265	7.7211	16	7.7327	7.7083	56	7.7434	7.6852
37	7.7266	7.7209	17	7.7329	7.7079	57	7.7437	7.6845
38	7.7267	7.7207	18	7.7331	7.7075	58	7.7441	7.6838
39	7.7268	7.7205	19	7.7333	7.7070	59	7.7444	7.6830
o 40	7.7269	7.7203	I 20	7.7336	7.7065	2 0	7.7447	7.6823

Argument: Halbe Zwischenzeit.

Arg.	log. A	log. B	Arg.	log. A	log. B	Arg.	log. A	log. B
2h 1'	7.7451	7.6815	2h 41'	7.7610	7.6437	3h 21'	7.7819	7.5877
2	7.7454	7.6807	42	7.7615	7.6425	22	7.7825	7.5860
3	7.7458	7.6800	43	7.7620	7.6414	23	7.7831	7.5843
4	7.7461	7.6792	44	7.7624	7.6402	24	7.7836	7.5825
5	7.7564	7.6784	45	7.7629	7.6390	25	7.7842	7.5808
6	7.7468	7.6776	46	7.7634	7.6378	26	7.7848	7.5790
7	7.7472	7.6768	47	7.7638	7.6366	27	7.7854	7.5772
8	7.7475	7.6759	48	7.7643	7.6354	28	7.7860	7.5754
9	7.7479	7.6751	49	7.7648	7.6342	29	7.7867	7.5736
10	7.7482	7.6743	50	7.7653	7.6329	30	7.7873	7.5717
11	7.7486	7.6734	51	7.7658	7.6317	31	7.7879	7.5699
12	7.7490	7.6726	52	7.7663	7.6304	32	7.7885	7.5680
13	7.7494	7.6717	53	7.7668	7.6291	33	7.7891	7.5661
14	7.7497	7.6708	54	7.7673	7.6278	34	7.7898	7.5641
15	7.7501	7.6700	55	7.7678	7.6265	35	7.7904	7.5622
16	7.7505	7.6691	56	7.7683	7.6252	36	7.7910	7.5602
17	7.7509	7.6682	57	7.7688	7.6239	37	7.7916	7.5582
18	7.7513	7.6673	58	7.7693	7.6225	38	7.7923	7.5562
19	7.7517	7.6663	59	7.7698	7.6212	39	7.7929	7.5542
20	7.7521	7.6654	3 0	7.7703	7.6198	40	7.7936	7.5522
21	7.7525	7.6645	1	7.7708	7.6184	41	7.7942	7.5501
22	7.7529	7.6635	2	7.7713	7.6170	42	7.7949	7.5480
23	7.7533	7.6626	3	7.7719	7.6156	43	7.7955	7.5459
24	7.7537	7.6616	4	7.7724	7.6142	44	7.7962	7.5437
25	7.7541	7.6606	5	7.7729	7.6127	45	7.7969	7.5416
26	7.7545	7.6597	6	7.7735	7.6113	46	7.7975	7.5394
27	7.7549	7.6587	7	7.7740	7.6098	47	7.7982	7.5372
28	7.7553	7.6577	8	7.7745	7.6083	48	7.7989	7.5350
29	7.7557	7.6567	9	7.7751	7.6068	49	7.7995	7.5327
30	7.7562	7.6556	10	7.7756	7.6053	50	7.8002	7.5304
31	7.7566	7.6546	11	7.7762	7.6038	51	7.8009	7.5281
32	7.7570	7.6536	12	7.7767	7.6023	52	7.8016	7.5258
33	7.7575	7.6525	13	7.7773	7.6007	53	7.8023	7.5234
34	7.7579	7.6514	14	7.7779	7.5991	54	7.8030	7.5211
35	7.7583	7.6504	15	7.7784	7.5975	55	7.8037	7.5186
36	7.7588	7.6493	16	7.7790	7.5959	56	7.8044	7.5162
37	7.7592	7.6482	17	7.7796	7.5943	57	7.8051	7.5137
38	7.7597	7.6471	18	7.7801	7.5927	58	7.8058	7.5112
39	7.7601	7.6460	19	7.7807	7.5910	59	7.8065	7.5087
2 40	7.7606	7.6448	3 20	7.7813	7.5894	4 0	7.8072	7.5062

Argument: Halbe Zwischenzeit.

Arg.	log. A	log. B	Arg.	log. A	log. B	Arg.	log. A	log. B
4 ^h 1'	7.8079	7.5036	4 ^h 41'	7.8396	7.3684	5 ^h 21'	7.8773	7.1061
2	7.8086	7.5010	42	7.8404	7.3639	22	7.8784	7.0960
3	7.8094	7.4983	43	7.8413	7.3594	23	7.8794	7.0855
4	7.8101	7.4957	44	7.8422	7.3548	24	7.8804	7.0748
5	7.8108	7.4930	45	7.8430	7.3501	25	7.8815	7.0637
6	7.8116	7.4902	46	7.8439	7.3454	26	7.8825	7.0522
7	7.8123	7.4874	47	7.8448	7.3406	27	7.8836	7.0404
8	7.8130	7.4846	48	7.8457	7.3357	28	7.8846	7.0282
9	7.8138	7.4818	49	7.8466	7.3307	29	7.8857	7.0156
10	7.8145	7.4789	50	7.8475	7.3256	30	7.8868	7.0025
11	7.8153	7.4760	51	7.8484	7.3205	31	7.8878	6.9889
12	7.8160	7.4731	52	7.8493	7.3152	32	7.8889	6.9748
13	7.8168	7.4701	53	7.8502	7.3099	33	7.8900	6.9602
14	7.8176	7.4671	54	7.8511	7.3045	34	7.8911	6.9449
15	7.8183	7.4640	55	7.8520	7.2989	35	7.8922	6.9290
16	7.8191	7.4609	56	7.8530	7.2933	36	7.8932	6.9125
17	7.8199	7.4578	57	7.8539	7.2876	37	7.8943	6.8953
18	7.8206	7.4546	58	7.8548	7.2817	38	7.8954	6.8770
19	7.8214	7.4514	59	7.8558	7.2758	39	7.8965	6.8580
20	7.8222	7.4482	5 0	7.8567	7.2697	40	7.8977	6.8379
21	7.8230	7.4449	1	7.8576	7.2635	41	7.8988	6.8168
22	7.8238	7.4415	2	7.8586	7.2572	42	7.8999	6.7945
23	7.8246	7.4381	3	7.8595	7.2507	43	7.9010	6.7709
24	7.8254	7.4347	4	7.8605	7.2442	44	7.9021	6.7457
25	7.8262	7.4312	5	7.8614	7.2374	45	7.9033	6.7189
26	7.8270	7.4277	6	7.8624	7.2306	46	7.9044	6.6901
27	7.8278	7.4241	7	7.8634	7.2236	47	7.9055	6.6591
28	7.8286	7.4205	8	7.8643	7.2164	48	7.9067	6.6255
29	7.8294	7.4168	9	7.8653	7.2091	49	7.9078	6.5889
30	7.8302	7.4131	10	7.8663	7.2016	50	7.9090	6.5487
31	7.8311	7.4093	11	7.8673	7.1940	51	7.9102	6.5041
32	7.8319	7.4055	12	7.8683	7.1861	52	7.9113	6.4541
33	7.8328	7.4016	13	7.8693	7.1781	53	7.9125	6.3973
34	7.8336	7.3977	14	7.8703	7.1699	54	7.9137	6.3316
35	7.8344	7.3937	15	7.8713	7.1615	55	7.9148	6.2536
36	7.8353	7.3876	16	7.8723	7.1529	56	7.9160	6.1579
37	7.8361	7.3855	17	7.8733	7.1440	57	7.9172	6.0341
38	7.8370	7.3813	18	7.8743	7.1349	58	7.9184	5.8593
39	7.8378	7.3771	19	7.8753	7.1256	59	7.9196	5.5594
4 40	7.8387	7.3728	5 20	7.8763	7.1160	6 0	7.9208	— ∞

$\frac{1}{2} T$	log. f	Diff.	$\frac{1}{2} T$	log. f	Diff.	$\frac{1}{2} T$	log. f	Diff.
6 ^h 1'	0.0024		6 ^h 41'	0.0994		7 ^h 21'	0.1988	
2	0048	24	42	1018	24	22	2014	26
3	0072	24	43	1043	25	23	2039	25
4	0097	25	44	1067	24	24	2065	26
5	0121	24	45	1092	25	25	2090	25
		24			24			26
6	0.0145	24	46	0.1116	25	26	0.2116	26
7	0169	24	47	1141	24	27	2142	25
8	0193	24	48	1165	25	28	2167	26
9	0217	24	49	1190	24	29	2193	26
10	0241	24	50	1214	25	30	2219	26
		24			25			26
11	0.0265	25	51	0.1239	25	31	0.2245	26
12	0290	24	52	1264	24	32	2271	25
13	0314	24	53	1288	25	33	2296	26
14	0338	24	54	1313	25	34	2322	26
15	0362	24	55	1338	25	35	2348	26
		24			25			26
16	0.0386	24	56	0.1363	25	36	0.2374	26
17	0410	25	57	1388	24	37	2400	26
18	0435	24	58	1412	24	38	2426	26
19	0459	24	59	1436	25	39	2452	26
20	0483	24	7 0	1461	25	40	2478	26
		24			25			26
21	0.0507	24	1	0.1486	25	41	0.2504	26
22	0531	25	2	1511	25	42	2530	27
23	0556	24	3	1536	25	43	2557	26
24	0580	24	4	1561	25	44	2583	26
25	0604	24	5	1586	25	45	2609	27
		24			25			26
26	0.0628	25	6	0.1611	25	46	0.2636	27
27	0653	24	7	1636	25	47	2662	26
28	0677	25	8	1661	25	48	2689	27
29	0702	24	9	1686	25	49	2715	26
30	0726	24	10	1711	25	50	2742	27
		24			25			27
31	0.0750	25	11	0.1736	25	51	0.2769	26
32	0775	24	12	1761	26	52	2795	27
33	0799	24	13	1787	25	53	2822	26
34	0823	24	14	1812	25	54	2848	27
35	0847	24	15	1837	25	55	2875	27
		25			25			27
36	0.0872	24	16	0.1862	25	56	0.2902	27
37	0896	24	17	1887	26	57	2929	27
38	0920	25	18	1913	25	58	2956	27
39	0945	24	19	1938	25	59	2983	27
6 40	0969	25	7 20	1963	25	8 0	3010	28

$\frac{1}{2} T$	log. f	Diff.	$\frac{1}{2} T$	log. f	Diff.	$\frac{1}{2} T$	log. f	Diff.
8 ^h 1'	0.3038	27	8 ^h 41'	0.4180	30	9 ^h 21'	0.5476	35
2	3065	27	42	4210	31	22	5511	36
3	3092	27	43	4241	30	23	5547	35
4	3119	28	44	4271	30	24	5582	35
5	3147	27	45	4301	31	25	5617	36
6	0.3174	28	46	0.4332	31	26	0.5653	36
7	3202	28	47	4363	31	27	5689	37
8	3230	27	48	4394	31	28	5726	37
9	3257	28	49	4425	30	29	5762	36
10	3285	28	50	4455	32	30	5798	36
11	0.3313	28	51	0.4487	31	31	0.5835	37
12	3341	27	52	4518	31	32	5872	37
13	3368	28	53	4549	32	33	5909	37
14	3396	28	54	4581	31	34	5946	37
15	3424	29	55	4612	32	35	5983	38
16	0.3453	28	56	0.4644	32	36	0.6021	38
17	3481	28	57	4676	31	37	6059	38
18	3509	28	58	4707	32	38	6097	38
19	3537	29	59	4739	32	39	6135	38
20	3566	28	9 0	4771	33	40	6173	39
21	0.3594	29	1	0.4804	32	41	0.6212	39
22	3623	28	2	4836	33	42	6251	39
23	3651	29	3	4869	32	43	6290	39
24	3680	29	4	4901	33	44	6329	39
25	3709	29	5	4934	33	45	6368	40
26	0.3738	29	6	0.4967	33	46	0.6408	40
27	3767	29	7	5000	33	47	6448	41
28	3796	29	8	5033	33	48	6489	40
29	3825	29	9	5066	33	49	6529	40
30	3854	29	10	5099	34	50	6569	41
31	0.3883	29	11	0.5133	34	51	0.6610	42
32	3912	30	12	5167	33	52	6652	41
33	3942	29	13	5200	34	53	6693	42
34	3971	30	14	5234	34	54	6735	41
35	4001	29	15	5268	35	55	6776	42
36	0.4030	30	16	0.5303	34	56	0.6818	43
37	4060	30	17	5337	35	57	6861	42
38	4090	30	18	5372	34	58	6903	43
39	4120	30	19	5406	35	59	6946	44
8 40	4150	30	9 20	5441	35	10 0	6990	43

$\frac{1}{2} T$	log. f	Diff.	$\frac{1}{2} T$	log. f	Diff.	$\frac{1}{2} T$	log. f	Diff.
10 ^h 1'	0.7033	44	10 ^h 26'	0.8234	54	10 ^h 51'	0.9747	70
2	7077	44	27	8288	54	52	9817	71
3	7121	45	28	8342	54	53	9888	72
4	7166	45	29	8396	55	54	0.9960	73
5	7211	45	30	8451	55	55	1.0033	74
6	0.7256	45	31	0.8506	56	56	1.0107	75
7	7301	46	32	8562	57	57	0182	76
8	7347	46	33	8619	57	58	0258	78
9	7393	46	34	8676	58	59	0336	78
10	7439	47	35	8734	58	11 0	0414	80
11	0.7486	47	36	0.8792	59	1	1.0494	80
12	7533	48	37	8851	59	2	0574	82
13	7581	48	38	8910	60	3	0656	84
14	7629	48	39	8970	61	4	0740	85
15	7677	49	40	9031	61	5	0825	86
16	0.7726	49	41	0.9092	63	6	1.0911	88
17	7775	49	42	9155	62	7	0999	89
18	7824	50	43	9217	64	8	1088	91
19	7874	50	44	9281	64	9	1179	92
20	7924	51	45	9345	65	10	1271	94
21	0.7975	51	46	0.9410	66	11	1.1365	96
22	8026	51	47	9476	67	12	1461	98
23	8077	52	48	9543	67	13	1559	100
24	8129	53	49	9610	68	14	1659	102
10 25	8182	52	10 50	9678	69	11 15	1761	

Reduction der Zeit auf das Bessel'sche Jahr.

1850	— 5 ^h 2 ^m 16 ^s .0	1876	+ 11 ^h 49 ^m 46 ^s .9
1851	— 10 51 1.9	1877	+ 6 1 0.8
1852	+ 7 20 12.0	1878	+ 0 12 14.6
1853	+ 1 31 25.9	1879	— 5 36 31.3
1854	— 4 17 20.3	1880	+ 12 34 42.7
1855	— 10 6 6.2	1881	+ 6 45 56.5
1856	+ 8 5 7.9	1882	+ 0 57 10.6
1857	+ 2 16 21.7	1883	— 4 51 35.6
1858	— 3 32 24.2	1884	+ 13 19 38.5
1859	— 9 21 10.4	1885	+ 7 30 52.5
1860	+ 8 50 3.7	1886	+ 1 42 6.3
1861	+ 3 1 17.4	1887	— 4 6 39.6
1862	— 2 47 28.5	1888	+ 14 4 34.3
1863	— 8 36 14.4	1889	+ 6 15 48.2
1864	+ 9 34 59.5	1890	+ 2 27 2.0
1865	+ 3 46 13.4	1891	— 3 21 43.9
1866	— 2 2 32.8	1892	+ 14 49 30.1
1867	— 7 51 18.7	1893	+ 9 0 44.0
1868	+ 10 19 55.3	1894	+ 3 11 58.0
1869	+ 4 31 9.1	1895	— 2 36 48.2
1870	— 1 17 36.8	1896	+ 15 44 25.9
1871	— 7 6 23.0	1897	+ 9 45 40.0
1872	+ 11 4 51.1	1898	+ 3 56 53.8
1873	+ 5 16 4.8	1899	— 1 51 52.1
1874	— 0 32 41.1	1900	— 7 40 38.3
1875	— 6 21 27.0		

Jahre	Epochen	Arg. Tage	Bewegung. + Solar-Nut.	Jahre.Tage.	Nut.	Jahre.Tage.	Nut.
1871	18 ^h 38 ^m 41 ^s 67						
1872	18 37 44.37	0	0 ^h 0 ^m 0 ^s 00	1871. 0	0 ^s 01	1882. 0	2 ^s 04
1873	18 40 43.64	10	0 39 25.58	100 0.00		100 2.00	
1874	18 39 46.34	20	1 18 51.15	200 0.00		200 1.95	
1875	18 38 49.05	30	1 58 16.71	300 0.01		300 1.89	
				400 0.02		400 1.83	
1876	18 37 51.75	40	2 37 42.27	1872. 0	0.02	1883. 0	1.85
1877	18 40 51.02	50	3 17 7.81	100 0.04		100 1.78	
1878	18 39 53.72	60	3 56 33.35	200 0.07		200 1.71	
1879	18 38 56.43	70	4 35 58.88	300 0.11		300 1.62	
1880	18 37 59.13	80	5 15 24.41	400 0.16		400 1.54	
				1873. 0	0.14	1884. 0	1.57
1881	18 40 58.40	90	5 54 49.94	100 0.19		100 1.48	
1882	18 40 1.10	100	6 34 15.47	200 0.25		200 1.39	
1883	18 39 3.81	110	7 13 41.00	300 0.32		300 1.29	
1884	18 38 6.51	120	7 53 6.55	400 0.39		400 1.19	
1885	18 41 5.78	130	8 32 32.10	1874. 0	0.36	1885. 0	1.23
				100 0.44		100 1.13	
1886	18 40 8.48	140	9 11 57.66	200 0.52		200 1.03	
1887	18 39 11.19	150	9 51 23.23	300 0.60		300 0.93	
1888	18 38 13.89	160	10 30 48.81	400 0.69		400 0.83	
1889	18 41 13.16	170	11 10 14.38	1875. 0	0.66	1886. 0	0.87
1890	18 40 15.87	180	11 49 39.96	100 0.75		100 0.77	
1891	18 39 18.57	190	12 29 5.53	200 0.84		200 0.67	
				300 0.93		300 0.58	
				400 1.03		400 0.50	
				1876. 0	1.00	1887. 0	0.52
				100 1.09		100 0.44	
				200 1.19		200 0.36	
				300 1.28		300 0.29	
				400 1.37		400 0.23	
				1877. 0	1.34	1888. 0	0.25
				100 1.43		100 0.19	
				200 1.52		200 0.14	
				300 1.60		300 0.09	
				400 1.68		400 0.06	
				1878. 0	1.65	1889. 0	0.07
				100 1.73		100 0.04	
				200 1.80		200 0.02	
				300 1.87		300 0.00	
				400 1.92		400 0.00	
				1879. 0	1.90	1890. 0	0.00
				100 1.96		100 0.00	
				200 2.02		200 0.01	
				300 2.04		300 0.03	
				400 2.07		400 0.06	
				1880. 0	2.06	1891. 0	0.05
				100 2.09		100 0.09	
				200 2.10		200 0.13	
				300 2.11		300 0.18	
				400 2.11		400 0.24	
				1881. 0	2.11		
				100 2.10			
				200 2.08			
				300 2.06			
				400 2.02			

TAFEL, um die Monate in Tage des Jahres zu verwandeln.		
Monate	Tage des Jahres	
	c	b
Januar o	o	o
Februar o	31	31
März o	59	60
April o	90	91
Mai o	120	121
Juni o	151	152
Juli o	181	182
August o	212	213
Septbr. o	243	244
October o	273	274
Novbr. o	304	305
Decbr. o	334	335

Tafel der mittleren Rectascension der Sonne.

Proportionaltheile der Bewegung.

Tage	39 ^m 25 ^s 58	39 ^m 25 ^s 57	39 ^m 25 ^s 56	39 ^m 25 ^s 55	39 ^m 25 ^s 54	39 ^m 25 ^s 53
1	3 ^m 56 ^s 56	3 ^m 56 ^s 56	3 ^m 56 ^s 56	3 ^m 56 ^s 56	3 ^m 56 ^s 55	3 ^m 56 ^s 55
2	7 53.12	7 53.11	7 53.11	7 53.11	7 53.11	7 53.11
3	11 49.67	11 49.67	11 49.67	11 49.67	11 49.66	11 49.66
4	15 46.23	15 46.23	15 46.22	15 46.22	15 46.22	15 46.21
5	19 42.79	19 42.79	19 42.78	19 42.78	19 42.77	19 42.77
6	23 39.35	23 39.34	23 39.34	23 39.33	23 39.32	23 39.32
7	27 35.91	27 35.90	27 35.89	27 35.89	27 35.88	27 35.87
8	31 32.46	31 32.46	31 32.45	31 32.44	31 32.43	31 32.42
9	35 29.02	35 29.01	35 29.00	35 29.00	35 28.99	35 28.98

Horizontalparallaxe der Sonne, nach *Leverrier*.

Tag	Parallaxe	log. Parallaxe	Tag	Parallaxe	log. Parallaxe
Januar 0	9" 10	0.9590	Juli 9	8" 80	0.9445
10	9.10	0.9590	19	8.81	0.9450
20	9.09	0.9586	29	8.82	0.9455
30	9.08	0.9581	August 8	8.83	0.9460
Februar 9	9.07	0.9576	18	8.84	0.9465
19	9.05	0.9566	28	8.86	0.9474
März 1	9.02	0.9552	September 7	8.89	0.9489
11	9.00	0.9542	17	8.91	0.9499
21	8.98	0.9533	27	8.94	0.9513
31	8.95	0.9518	October 7	8.96	0.9523
April 10	8.93	0.9509	17	8.99	0.9538
20	8.90	0.9494	27	9.01	0.9547
30	8.86	0.9474	November 6	9.04	0.9562
Mai 10	8.85	0.9469	16	9.06	0.9571
20	8.84	0.9465	26	9.07	0.9576
30	8.82	0.9455	December 6	9.08	0.9581
Juni 9	8.81	0.9450	16	9.09	0.9586
19	8.80	0.9445	26	9.10	0.9590
29	8.80	0.9445	36	9.10	0.9590

Argument: Länge der Sonne = \odot

Arg.	log. a	A	Arg.	Arg.	log. a	A	Arg.
0° 180°	1.2731	+0° 0'	180° 0°	45° 225°	1.2927	+2° 28'	135° 315°
1 181	1.2731	0 5	179 359	46 226	1.2933	2 28	134 314
2 182	1.2732	0 11	178 358	47 227	1.2940	2 27	133 313
3 183	1.2732	0 16	177 357	48 228	1.2946	2 27	132 312
4 184	1.2733	0 22	176 356	49 229	1.2952	2 26	131 311
5 185	1.2734	0 27	175 355	50 230	1.2959	2 25	130 310
6 186	1.2736	0 32	174 354	51 231	1.2965	2 24	129 309
7 187	1.2737	0 37	173 353	52 232	1.2971	2 22	128 308
8 188	1.2739	0 43	172 352	53 233	1.2978	2 21	127 307
9 189	1.2741	0 48	171 351	54 234	1.2984	2 19	126 306
10 190	1.2744	0 53	170 350	55 235	1.2990	2 17	125 305
11 191	1.2746	0 58	169 349	56 236	1.2995	2 15	124 304
12 192	1.2749	1 3	168 348	57 237	1.3001	2 13	123 303
13 193	1.2752	1 8	167 347	58 238	1.3007	2 11	122 302
14 194	1.2755	1 12	166 346	59 239	1.3013	2 8	121 301
15 195	1.2758	1 17	165 345	60 240	1.3018	2 6	120 300
16 196	1.2762	1 22	164 344	61 241	1.3023	2 3	119 299
17 197	1.2766	1 26	163 343	62 242	1.3029	2 0	118 298
18 198	1.2770	1 30	162 342	63 243	1.3034	1 57	117 297
19 199	1.2774	1 34	161 341	64 244	1.3039	1 54	116 296
20 200	1.2779	1 38	160 340	65 245	1.3043	1 50	115 295
21 201	1.2783	1 42	159 339	66 246	1.3048	1 47	114 294
22 202	1.2788	1 46	158 338	67 247	1.3053	1 43	113 293
23 203	1.2793	1 50	157 337	68 248	1.3057	1 40	112 292
24 204	1.2798	1 53	156 336	69 249	1.3061	1 36	111 291
25 205	1.2803	1 57	155 335	70 250	1.3065	1 32	110 290
26 206	1.2808	2 0	154 334	71 251	1.3069	1 28	109 289
27 207	1.2814	2 3	153 333	72 252	1.3073	1 24	108 288
28 208	1.2819	2 6	152 332	73 253	1.3076	1 20	107 287
29 209	1.2825	2 9	151 331	74 254	1.3080	1 16	106 286
30 210	1.2831	2 11	150 330	75 255	1.3083	1 11	105 285
31 211	1.2837	2 13	149 329	76 256	1.3086	1 7	104 284
32 212	1.2843	2 16	148 328	77 257	1.3088	1 3	103 283
33 213	1.2849	2 18	147 327	78 258	1.3091	0 58	102 282
34 214	1.2855	2 20	146 326	79 259	1.3093	0 53	101 281
35 215	1.2862	2 21	145 325	80 260	1.3095	0 49	100 280
36 216	1.2868	2 23	144 324	81 261	1.3097	0 44	99 279
37 217	1.2874	2 24	143 323	82 262	1.3099	0 39	98 278
38 218	1.2881	2 25	142 322	83 263	1.3101	0 34	97 277
39 219	1.2887	2 26	141 321	84 264	1.3102	0 30	96 276
40 220	1.2894	2 27	140 320	85 265	1.3103	0 25	95 275
41 221	1.2900	2 28	139 319	86 266	1.3104	0 20	94 274
42 222	1.2907	2 28	138 318	87 267	1.3105	0 15	93 273
43 223	1.2914	2 28	137 317	88 268	1.3105	0 10	92 272
44 224	1.2920	2 28	136 316	89 269	1.3106	0 5	91 271
45 225	1.2927	+2 28	135 315	90 270	1.3106	+0 0	90 270
Arg.	log. a	A	Arg.	Arg.	log. a	A	Arg.

Argumente: Summe und Unterschied der Sonnenlänge und der Declination der Sterne.

Arg.		Arg.	Arg.		Arg.
0°	-4"07+	180°	45°	-2"88+	135°
1	4.07	179	46	2.83	134
2	4.07	178	47	2.78	133
3	4.06	177	48	2.72	132
4	4.06	176	49	2.67	131
5	4.05	175	50	2.62	130
6	4.05	174	51	2.56	129
7	4.04	173	52	2.51	128
8	4.03	172	53	2.45	127
9	4.02	171	54	2.39	126
10	4.01	170	55	2.33	125
11	4.00	169	56	2.28	124
12	3.98	168	57	2.22	123
13	3.97	167	58	2.16	122
14	3.95	166	59	2.10	121
15	3.93	165	60	2.03	120
16	3.91	164	61	1.97	119
17	3.89	163	62	1.91	118
18	3.87	162	63	1.85	117
19	3.85	161	64	1.78	116
20	3.82	160	65	1.72	115
21	3.80	159	66	1.66	114
22	3.77	158	67	1.59	113
23	3.75	157	68	1.52	112
24	3.72	156	69	1.46	111
25	3.69	155	70	1.39	110
26	3.66	154	71	1.33	109
27	3.63	153	72	1.26	108
28	3.59	152	73	1.19	107
29	3.56	151	74	1.12	106
30	3.52	150	75	1.05	105
31	3.49	149	76	0.98	104
32	3.45	148	77	0.92	103
33	3.41	147	78	0.85	102
34	3.37	146	79	0.78	101
35	3.33	145	80	0.71	100
36	3.29	144	81	0.64	99
37	3.25	143	82	0.57	98
38	3.21	142	83	0.50	97
39	3.16	141	84	0.43	96
40	3.12	140	85	0.35	95
41	3.07	139	86	0.28	94
42	3.02	138	87	0.21	93
43	2.98	137	88	0.14	92
44	2.93	136	89	0.07	91
45	-2.88+	135	90	-0.00+	90

Von Argumenten, die $> 180^\circ$ sind, werden 180° subtrahirt und die Vorzeichen umgekehrt.

Argument: Länge des aufsteigenden Knotens der Mondbahn = Ω

Arg.	log. b	B	c	Arg.
0° 180°	0.9649	0° 0'	0° 00	180° 0°
1 181	0.9649	0 15	0.28	179 359
2 182	0.9648	0 31	0.55	178 358
3 183	0.9646	0 46	0.83	177 357
4 184	0.9644	1 1	1.10	176 356
5 185	0.9642	1 16	1.38	175 355
6 186	0.9638	1 32	1.65	174 354
7 187	0.9634	1 47	1.93	173 353
8 188	0.9630	2 2	2.20	172 352
9 189	0.9625	2 17	2.48	171 351
10 190	0.9620	2 31	2.75	170 350
11 191	0.9614	2 46	3.02	169 349
12 192	0.9607	3 0	3.29	168 348
13 193	0.9599	3 15	3.56	167 347
14 194	0.9592	3 29	3.83	166 346
15 195	0.9583	3 43	4.10	165 345
16 196	0.9574	3 57	4.36	164 344
17 197	0.9565	4 11	4.63	163 343
18 198	0.9555	4 24	4.89	162 342
19 199	0.9544	4 37	5.15	161 341
20 200	0.9533	4 50	5.41	160 340
21 201	0.9521	5 3	5.67	159 339
22 202	0.9509	5 16	5.93	158 338
23 203	0.9496	5 28	6.18	157 337
24 204	0.9483	5 40	6.44	156 336
25 205	0.9469	5 51	6.69	155 335
26 206	0.9455	6 3	6.94	154 334
27 207	0.9440	6 14	7.18	153 333
28 208	0.9424	6 24	7.43	152 332
29 209	0.9409	6 35	7.67	151 331
30 210	0.9392	6 44	7.91	150 330
31 211	0.9376	6 54	8.15	149 329
32 212	0.9359	7 3	8.39	148 328
33 213	0.9341	7 12	8.62	147 327
34 214	0.9323	7 20	8.85	146 326
35 215	0.9305	7 28	9.08	145 325
36 216	0.9286	7 35	9.30	144 324
37 217	0.9267	7 42	9.52	143 323
38 218	0.9247	7 49	9.74	142 322
39 219	0.9227	7 55	9.96	141 321
40 220	0.9207	8 0	10.17	140 320
41 221	0.9186	8 5	10.38	139 319
42 222	0.9166	8 10	10.59	138 318
43 223	0.9144	8 14	10.79	137 317
44 224	0.9123	8 17	10.99	136 316
45 225	0.9102	8 20	11.19	135 315

 b ist positiv.

Für Argumente zwischen 0° und 90° ist negativ

" 90 " 180 " positiv

" 180 " 270 " negativ

" 270 " 360 " positiv

 B c

negativ

negativ

positiv

positiv.

Argument: Länge des aufsteigenden Knotens der Mondbahn = δ

Arg.	log. b	B	c	Arg.
45° 225°	0.9102	8° 20'	11.19	135° 315°
46 226	0.9080	8 22	11.38	134 314
47 227	0.9058	8 24	11.57	133 313
48 228	0.9035	8 25	11.76	132 312
49 229	0.9013	8 25	11.94	131 311
50 230	0.8990	8 25	12.12	130 310
51 231	0.8968	8 24	12.30	129 309
52 232	0.8945	8 23	12.47	128 308
53 233	0.8923	8 21	12.64	127 307
54 234	0.8900	8 18	12.80	126 306
55 235	0.8877	8 15	12.96	125 305
56 236	0.8855	8 11	13.12	124 304
57 237	0.8832	8 6	13.27	123 303
58 238	0.8810	8 0	13.42	122 302
59 239	0.8787	7 54	13.56	121 301
60 240	0.8765	7 48	13.70	120 300
61 241	0.8743	7 40	13.84	119 299
62 242	0.8722	7 32	13.97	118 298
63 243	0.8701	7 23	14.10	117 297
64 244	0.8680	7 14	14.22	116 296
65 245	0.8659	7 4	14.34	115 295
66 246	0.8639	6 53	14.46	114 294
67 247	0.8619	6 41	14.57	113 293
68 248	0.8600	6 29	14.67	112 292
69 249	0.8581	6 17	14.77	111 291
70 250	0.8563	6 3	14.87	110 290
71 251	0.8545	5 49	14.96	109 289
72 252	0.8528	5 35	15.05	108 288
73 253	0.8512	5 20	15.13	107 287
74 254	0.8496	5 4	15.21	106 286
75 255	0.8481	4 48	15.28	105 285
76 256	0.8467	4 31	15.35	104 284
77 257	0.8454	4 14	15.42	103 283
78 258	0.8442	3 56	15.48	102 282
79 259	0.8430	3 38	15.53	101 281
80 260	0.8419	3 19	15.58	100 280
81 261	0.8410	3 1	15.63	99 279
82 262	0.8401	2 41	15.67	98 278
83 263	0.8393	2 22	15.71	97 277
84 264	0.8386	2 2	15.74	96 276
85 265	0.8381	1 42	15.76	95 275
86 266	0.8376	1 22	15.78	94 274
87 267	0.8372	1 2	15.80	93 273
88 268	0.8370	0 41	15.81	92 272
89 269	0.8368	0 21	15.82	91 271
90 270	0.8368	0 0	15.82	90 270

b ist positiv.

Für Argumente zwischen 0° und 90°	ist	<i>B</i>	<i>c</i>
„ 90	„ 180	negativ	negativ
„ 180	„ 270	positiv	negativ
„ 270	„ 360	negativ	positiv
„ 360	„	positiv	positiv.

Argument: Doppelte Länge der Sonne = 2 ☉					
Arg.	log. f	F	g	Arg.	
0° 180°	9.7410	0° 0'	0° 00	180°	0°
2 182	9.7409	0 10	0.04	178	358
4 184	9.7408	0 20	0.08	176	356
6 186	9.7406	0 30	0.12	174	354
8 188	9.7403	0 39	0.16	172	352
10 190	9.7399	0 49	0.20	170	350
12 192	9.7395	0 58	0.24	168	348
14 194	9.7389	1 7	0.28	166	346
16 196	9.7383	1 16	0.32	164	344
18 198	9.7376	1 24	0.36	162	342
20 200	9.7369	1 32	0.40	160	340
22 202	9.7361	1 40	0.44	158	338
24 204	9.7352	1 47	0.47	156	336
26 206	9.7342	1 54	0.51	154	334
28 208	9.7332	2 0	0.55	152	332
30 210	9.7322	2 5	0.58	150	330
32 212	9.7311	2 10	0.62	148	328
34 214	9.7299	2 15	0.65	146	326
36 216	9.7287	2 19	0.68	144	324
38 218	9.7275	2 22	0.72	142	322
40 220	9.7263	2 24	0.75	140	320
42 222	9.7250	2 26	0.78	138	318
44 224	9.7237	2 28	0.81	136	316
46 226	9.7224	2 28	0.84	134	314
48 228	9.7211	2 28	0.87	132	312
50 230	9.7198	2 27	0.89	130	310
52 232	9.7185	2 25	0.92	128	308
54 234	9.7172	2 22	0.94	126	306
56 236	9.7159	2 19	0.97	124	304
58 238	9.7147	2 15	0.99	122	302
60 240	9.7135	2 11	1.01	120	300
62 242	9.7124	2 6	1.03	118	298
64 244	9.7113	2 0	1.05	116	296
66 246	9.7102	1 53	1.06	114	294
68 248	9.7092	1 46	1.08	112	292
70 250	9.7083	1 38	1.09	110	290
72 252	9.7074	1 30	1.11	108	288
74 254	9.7066	1 21	1.12	106	286
76 256	9.7059	1 12	1.13	104	284
78 258	9.7053	1 3	1.14	102	282
80 260	9.7048	0 53	1.15	100	280
82 262	9.7043	0 43	1.15	98	278
84 264	9.7040	0 32	1.16	96	276
86 266	9.7037	0 22	1.16	94	274
88 268	9.7036	0 11	1.16	92	272
90 270	9.7035	0 0	1.16	90	270
<i>f</i> ist positiv.					
Für Argumente zwischen 0° und 90°			<i>F</i>	<i>g</i>	
" 90 " 180			ist negativ	negativ	
" 180 " 270			" positiv	negativ	
" 270 " 360			" negativ	positiv	
			" positiv	positiv.	

Arg.	$x(x-1)$ 4	Diff.	$x(x-1)(x-\frac{1}{2})$ 6	$(x+\frac{1}{2})x(x-1)(x-2)$ 48	Arg.
	—		+	+	
0.00	0.00000	248	+ 0.0000 —	0.0000	1.00
0.01	0.00248	242	0.0008	0.0004	0.99
0.02	0.00490	238	0.0016	0.0008	0.98
0.03	0.00728	232	0.0023	0.0012	0.97
0.04	0.00960	228	0.0029	0.0016	0.96
0.05	0.01188	222	0.0036	0.0020	0.95
0.06	0.01410	218	0.0041	0.0024	0.94
0.07	0.01628	212	0.0047	0.0028	0.93
0.08	0.01840	208	0.0052	0.0032	0.92
0.09	0.02048	202	0.0056	0.0036	0.91
0.10	0.02250	198	0.0060	0.0039	0.90
0.11	0.02448	192	0.0064	0.0043	0.89
0.12	0.02640	188	0.0067	0.0046	0.88
0.13	0.02828	182	0.0070	0.0050	0.87
0.14	0.03010	178	0.0072	0.0053	0.86
0.15	0.03188	172	0.0074	0.0057	0.85
0.16	0.03360	168	0.0076	0.0060	0.84
0.17	0.03528	162	0.0078	0.0063	0.83
0.18	0.03690	158	0.0079	0.0066	0.82
0.19	0.03848	152	0.0080	0.0069	0.81
0.20	0.04000	148	0.0080	0.0072	0.80
0.21	0.04148	142	0.0080	0.0075	0.79
0.22	0.04290	138	0.0080	0.0078	0.78
0.23	0.04428	132	0.0080	0.0080	0.77
0.24	0.04560	128	0.0079	0.0083	0.76
0.25	0.04688	122	0.0078	0.0085	0.75
0.26	0.04810	118	0.0077	0.0088	0.74
0.27	0.04928	112	0.0076	0.0090	0.73
0.28	0.05040	108	0.0074	0.0092	0.72
0.29	0.05148	102	0.0072	0.0095	0.71
0.30	0.05250	98	0.0070	0.0097	0.70
0.31	0.05348	92	0.0068	0.0099	0.69
0.32	0.05440	88	0.0065	0.0101	0.68
0.33	0.05528	82	0.0063	0.0102	0.67
0.34	0.05610	78	0.0060	0.0104	0.66
0.35	0.05688	72	0.0057	0.0106	0.65
0.36	0.05760	68	0.0054	0.0107	0.64
0.37	0.05828	62	0.0051	0.0108	0.63
0.38	0.05890	58	0.0047	0.0110	0.62
0.39	0.05948	52	0.0044	0.0111	0.61
0.40	0.06000	48	0.0040	0.0112	0.60
0.41	0.06048	42	0.0036	0.0113	0.59
0.42	0.06090	38	0.0032	0.0114	0.58
0.43	0.06128	32	0.0029	0.0115	0.57
0.44	0.06160	28	0.0025	0.0115	0.56
0.45	0.06188	22	0.0021	0.0116	0.55
0.46	0.06210	18	0.0017	0.0116	0.54
0.47	0.06228	12	0.0012	0.0117	0.53
0.48	0.06240	8	0.0008	0.0117	0.52
0.49	0.06248	2	0.0004	0.0117	0.51
0.50	0.06250		+ 0.0000 —	0.0117	0.50
	—			+	

Arg.	$\frac{x^2}{2}$	Diff.	$\frac{x^2(x^2-1)}{12}$	Diff.	$\frac{x^2(x^2-1)}{24}$	$\frac{x(x^2-1)(x^2-4)}{240}$
+0.00	+0.00000	+5	+0.00000	+8	-0.0000	+0.0000
0.01	0.00005	15	0.00008	9	0.0000	0.0001
0.02	0.00020	25	0.00017	8	0.0000	0.0003
0.03	0.00045	35	0.00025	8	0.0000	0.0005
0.04	0.00080	45	0.00033	9	0.0001	0.0007
0.05	0.00125	55	0.00042	8	0.0001	0.0008
0.06	0.00180	65	0.00050	8	0.0001	0.0010
0.07	0.00245	75	0.00058	8	0.0002	0.0011
0.08	0.00320	85	0.00066	8	0.0003	0.0013
0.09	0.00405	95	0.00074	9	0.0003	0.0014
0.10	0.00500	105	0.00083	8	0.0004	0.0016
0.11	0.00605	115	0.00091	8	0.0005	0.0018
0.12	0.00720	125	0.00099	8	0.0006	0.0020
0.13	0.00845	135	0.00107	7	0.0007	0.0021
0.14	0.00980	145	0.00114	8	0.0008	0.0023
0.15	0.01125	155	0.00122	8	0.0009	0.0024
0.16	0.01280	165	0.00130	8	0.0010	0.0026
0.17	0.01445	175	0.00138	7	0.0012	0.0027
0.18	0.01620	185	0.00145	8	0.0013	0.0029
0.19	0.01805	195	0.00153	7	0.0014	0.0030
0.20	0.02000	205	0.00160	7	0.0016	0.0032
0.21	0.02205	215	0.00167	7	0.0018	0.0033
0.22	0.02420	225	0.00174	8	0.0019	0.0034
0.23	0.02645	235	0.00182	6	0.0021	0.0035
0.24	0.02880	245	0.00188	7	0.0023	0.0037
0.25	0.02625	255	0.00195	7	0.0024	0.0038
0.26	0.03380	265	0.0202	7	0.0026	0.0039
0.27	0.03645	275	0.0209	6	0.0028	0.0041
0.28	0.03920	285	0.0215	6	0.0030	0.0042
0.29	0.04205	295	0.0221	7	0.0032	0.0044
0.30	0.04500	305	0.0228	6	0.0034	0.0045
0.31	0.04805	315	0.0234	5	0.0036	0.0046
0.32	0.05120	325	0.0239	6	0.0038	0.0047
0.33	0.05445	335	0.0245	6	0.0040	0.0048
0.34	0.05780	345	0.0251	5	0.0043	0.0049
0.35	0.06125	355	0.0256	5	0.0045	0.0050
0.36	0.06480	365	0.0261	5	0.0047	0.0051
0.37	0.06845	375	0.0266	5	0.0049	0.0052
0.38	0.07220	385	0.0271	5	0.0051	0.0053
0.39	0.07605	395	0.0276	5	0.0054	0.0054
0.40	0.08000	405	0.0280	4	0.0056	0.0054
0.41	0.08405	415	0.0284	4	0.0058	0.0055
0.42	0.08820	425	0.0288	4	0.0061	0.0055
0.43	0.09245	435	0.0292	4	0.0063	0.0056
0.44	0.09680	445	0.0296	4	0.0065	0.0056
0.45	0.10125	455	0.0299	3	0.0067	0.0057
0.46	0.10580	465	0.0302	3	0.0070	0.0057
0.47	0.11045	475	0.0305	3	0.0072	0.0058
0.48	0.11520	485	0.0308	3	0.0074	0.0058
0.49	0.12005	495	0.0310	2	0.0076	0.0058
0.50	0.12500		0.0313	3	0.0078	0.0058

Arg.	$\frac{x^2}{2}$	Diff.	$x(x^2-1)$ 12	Diff.	$x^2(x^2-1)$ 24	$x(x^2-1)(x^2-4)$ 240
+0.50	+0.12500	+505	+0.0313	+	-0.0078	+0.0058
0.51	0.13005	515	0.0314	+	0.0080	0.0059
0.52	0.13520	525	0.0316	2	0.0082	0.0059
0.53	0.14045	535	0.0318	2	0.0084	0.0059
0.54	0.14580	545	0.0319	1	0.0086	0.0059
0.55	0.15125	555	0.0320	1	0.0088	0.0059
0.56	0.15680	565	0.0320	0	0.0090	0.0059
0.57	0.16245	575	0.0321	1	0.0091	0.0059
0.58	0.16820	585	0.0321	0	0.0093	0.0059
0.59	0.17405	595	0.0321	0	0.0095	0.0059
0.60	0.18000	605	0.0320	+	0.0096	0.0059
0.61	0.18605	615	0.0319	1	0.0097	0.0058
0.62	0.19220	625	0.0318	1	0.0099	0.0058
0.63	0.19845	635	0.0317	2	0.0100	0.0058
0.64	0.20480	645	0.0315	2	0.0101	0.0057
0.65	0.21125	655	0.0313	2	0.0102	0.0057
0.66	0.21780	665	0.0310	3	0.0102	0.0056
0.67	0.22445	675	0.0308	2	0.0103	0.0055
0.68	0.23120	685	0.0305	3	0.0104	0.0054
0.69	0.23805	695	0.0301	4	0.0104	0.0053
0.70	0.24500	705	0.0298	3	0.0104	0.0052
0.71	0.25205	715	0.0293	5	0.0104	0.0051
0.72	0.25920	725	0.0289	4	0.0104	0.0050
0.73	0.26645	735	0.0284	5	0.0104	0.0049
0.74	0.27380	745	0.0279	5	0.0103	0.0048
0.75	0.28125	755	0.0273	6	0.0103	0.0047
0.76	0.28880	765	0.0268	5	0.0102	0.0045
0.77	0.29645	775	0.0261	7	0.0101	0.0044
0.78	0.30420	785	0.0255	6	0.0101	0.0044
0.79	0.31205	795	0.0247	8	0.0099	0.0043
0.80	0.32000	805	0.0240	7	0.0098	0.0042
0.81	0.32805	815	0.0231	9	0.0096	0.0040
0.82	0.33620	825	0.0224	7	0.0094	0.0039
0.83	0.34445	835	0.0215	9	0.0092	0.0037
0.84	0.35280	845	0.0206	9	0.0089	0.0036
0.85	0.36125	855	0.0197	9	0.0087	0.0034
0.86	0.36980	865	0.0187	10	0.0084	0.0033
0.87	0.37845	875	0.0176	11	0.0080	0.0031
0.88	0.38720	885	0.0165	11	0.0077	0.0029
0.89	0.39605	895	0.0154	11	0.0073	0.0027
0.90	0.40500	905	0.0143	11	0.0069	0.0025
0.91	0.41405	915	0.0130	13	0.0064	0.0023
0.92	0.42320	925	0.0118	12	0.0059	0.0021
0.93	0.43245	935	0.0105	13	0.0054	0.0019
0.94	0.44180	945	0.0091	14	0.0049	0.0017
0.95	0.45125	955	0.0077	14	0.0043	0.0015
0.96	0.46080	965	0.0063	14	0.0037	0.0013
0.97	0.47045	975	0.0048	15	0.0030	0.0010
0.98	0.48020	985	0.0032	16	0.0023	0.0008
0.99	0.49005	995	0.0016	16	0.0016	0.0005
1.00	0.50000	995	0.0000	16	0.0008	0.0002
					0.0000	0.0000

	Sin.	Cosin.	Tang.	Cotg.	Sec.	Cosec.	
0	0.00000	1.00000	0.00000	infin.	1.00000	infin.	60
1	0.00029	1.00000	0.00029	3437.74667	1.00000	3437.74682	59
2	0.00058	1.00000	0.00058	1718.87319	1.00000	1718.87348	58
3	0.00087	1.00000	0.00087	1145.91530	1.00000	1145.91574	57
4	0.00116	1.00000	0.00116	859.43630	1.00000	859.43689	56
5	0.00145	1.00000	0.00145	687.54887	1.00000	687.54960	55
6	0.00175	1.00000	0.00175	572.95721	1.00000	572.95809	54
7	0.00204	1.00000	0.00204	491.10600	1.00000	491.10702	53
8	0.00233	1.00000	0.00233	429.71737	1.00000	429.71873	52
9	0.00262	1.00000	0.00262	381.97099	1.00000	381.97230	51
10	0.00291	1.00000	0.00291	343.77371	1.00000	343.77516	50
11	0.00320	0.99999	0.00320	312.52137	1.00001	312.52297	49
12	0.00349	0.99999	0.00349	286.47773	1.00001	286.47948	48
13	0.00378	0.99999	0.00378	264.44080	1.00001	264.44269	47
14	0.00407	0.99999	0.00407	245.55198	1.00001	245.55402	46
15	0.00436	0.99999	0.00436	229.18166	1.00001	229.18385	45
16	0.00465	0.99999	0.00465	214.85762	1.00001	214.85995	44
17	0.00495	0.99999	0.00495	202.21875	1.00001	202.22122	43
18	0.00524	0.99999	0.00524	190.98419	1.00001	190.98680	42
19	0.00553	0.99998	0.00553	180.93220	1.00002	180.93496	41
20	0.00582	0.99998	0.00582	171.88540	1.00002	171.88831	40
21	0.00611	0.99998	0.00611	163.70019	1.00002	163.70325	39
22	0.00640	0.99998	0.00640	156.25908	1.00002	156.26228	38
23	0.00669	0.99998	0.00669	149.46502	1.00002	149.46837	37
24	0.00698	0.99998	0.00698	143.23712	1.00002	143.24061	36
25	0.00727	0.99997	0.00727	137.50745	1.00003	137.51108	35
26	0.00756	0.99997	0.00756	132.21851	1.00003	132.22229	34
27	0.00785	0.99997	0.00785	127.32134	1.00003	127.32526	33
28	0.00814	0.99997	0.00815	122.77396	1.00003	122.77803	32
29	0.00844	0.99996	0.00844	118.54018	1.00004	118.54440	31
30	0.00873	0.99996	0.00873	114.58865	1.00004	114.59301	30
31	0.00902	0.99996	0.00902	110.89205	1.00004	110.89656	29
32	0.00931	0.99996	0.00931	107.42648	1.00004	107.43114	28
33	0.00960	0.99995	0.00960	104.17091	1.00005	104.17574	27
34	0.00989	0.99995	0.00989	101.10690	1.00005	101.11185	26
35	0.01018	0.99995	0.01018	98.21794	1.00005	98.22303	25
36	0.01047	0.99995	0.01047	95.48948	1.00005	95.49471	24
37	0.01076	0.99994	0.01076	92.90849	1.00006	92.91387	23
38	0.01105	0.99994	0.01105	90.46334	1.00006	90.46886	22
39	0.01134	0.99994	0.01135	88.14357	1.00006	88.14924	21
40	0.01164	0.99993	0.01164	85.93979	1.00007	85.94561	20
41	0.01193	0.99993	0.01193	83.84351	1.00007	83.84947	19
42	0.01222	0.99993	0.01222	81.84704	1.00007	81.85315	18
43	0.01251	0.99992	0.01251	79.94343	1.00008	79.94968	17
44	0.01280	0.99992	0.01280	78.12634	1.00008	78.13274	16
45	0.01309	0.99991	0.01309	76.39001	1.00009	76.39655	15
46	0.01338	0.99991	0.01338	74.72917	1.00009	74.73586	14
47	0.01367	0.99991	0.01367	73.13899	1.00009	73.14583	13
48	0.01396	0.99990	0.01396	71.61507	1.00010	71.62205	12
49	0.01425	0.99990	0.01425	70.15335	1.00010	70.16047	11
50	0.01454	0.99989	0.01455	68.75009	1.00011	68.75736	10
51	0.01483	0.99989	0.01484	67.40185	1.00011	67.40927	9
52	0.01513	0.99989	0.01513	66.10547	1.00011	66.11304	8
53	0.01542	0.99988	0.01542	64.85801	1.00012	64.86572	7
54	0.01571	0.99988	0.01571	63.65674	1.00012	63.66460	6
55	0.01600	0.99987	0.01600	62.49915	1.00013	62.50715	5
56	0.01629	0.99987	0.01629	61.38291	1.00013	61.39105	4
57	0.01658	0.99986	0.01658	60.30582	1.00014	60.31411	3
58	0.01687	0.99986	0.01687	59.26587	1.00014	59.27431	2
59	0.01716	0.99985	0.01716	58.26117	1.00015	58.26975	1
60	0.01745	0.99985	0.01746	57.28996	1.00015	57.29869	0
	Cosin.	Sin.	Cotg.	Tang.	Cosec.	Sec.	

	Sin.	Cosin.	Tang.	Cotg.	Sec.	Cosec.	
0	0.01745	0.99985	0.01746	57.28996	1.00015	57.29869	60
1	0.01774	0.99984	0.01775	56.35059	1.00016	56.35956	59
2	0.01803	0.99984	0.01804	55.44152	1.00016	55.45053	58
3	0.01832	0.99983	0.01833	54.56130	1.00017	54.47046	57
4	0.01862	0.99983	0.01862	53.70859	1.00017	53.71790	56
5	0.01891	0.99982	0.01891	52.88211	1.00018	52.89156	55
6	0.01920	0.99982	0.01920	52.08067	1.00018	52.09027	54
7	0.01949	0.99981	0.01949	51.30316	1.00019	51.31290	53
8	0.01978	0.99980	0.01978	50.54851	1.00020	50.55840	52
9	0.02007	0.99980	0.02007	49.81573	1.00020	49.82576	51
10	0.02036	0.99979	0.02036	49.10388	1.00021	49.11406	50
11	0.02065	0.99979	0.02066	48.41208	1.00021	48.42241	49
12	0.02094	0.99978	0.02095	47.73950	1.00022	47.74997	48
13	0.02123	0.99977	0.02124	47.08534	1.00023	47.09596	47
14	0.02152	0.99977	0.02153	46.44886	1.00023	46.45963	46
15	0.02181	0.99976	0.02182	45.82935	1.00024	45.84026	45
16	0.02211	0.99976	0.02211	45.22614	1.00024	45.23719	44
17	0.02240	0.99975	0.02240	44.63860	1.00025	44.64980	43
18	0.02269	0.99974	0.02269	44.06611	1.00026	44.07746	42
19	0.02298	0.99974	0.02298	43.50812	1.00026	43.51961	41
20	0.02327	0.99973	0.02328	42.96408	1.00027	42.97571	40
21	0.02356	0.99972	0.02357	42.43346	1.00028	42.44525	39
22	0.02385	0.99972	0.02386	41.91579	1.00028	41.92772	38
23	0.02414	0.99971	0.02415	41.41059	1.00029	41.42266	37
24	0.02443	0.99970	0.02444	40.91741	1.00030	40.92963	36
25	0.02472	0.99969	0.02473	40.43584	1.00031	40.44820	35
26	0.02501	0.99969	0.02502	39.96546	1.00031	39.97797	34
27	0.02530	0.99968	0.02531	39.50589	1.00032	39.51855	33
28	0.02560	0.99967	0.02560	39.05677	1.00033	39.06957	32
29	0.02589	0.99966	0.02589	38.61774	1.00034	38.63068	31
30	0.02618	0.99966	0.02619	38.18846	1.00034	38.20155	30
31	0.02647	0.99965	0.02648	37.76861	1.00035	37.78185	29
32	0.02676	0.99964	0.02677	37.35789	1.00036	37.37127	28
33	0.02705	0.99963	0.02706	36.95600	1.00037	36.96953	27
34	0.02734	0.99963	0.02735	36.56266	1.00037	36.57633	26
35	0.02763	0.99962	0.02764	36.17760	1.00038	36.19141	25
36	0.02792	0.99961	0.02793	35.80055	1.00039	35.81452	24
37	0.02821	0.99960	0.02822	35.43128	1.00040	35.44539	23
38	0.02850	0.99959	0.02851	35.06955	1.00041	35.08380	22
39	0.02879	0.99959	0.02881	34.71512	1.00041	34.72951	21
40	0.02908	0.99958	0.02910	34.36777	1.00042	34.38232	20
41	0.02938	0.99957	0.02939	34.02730	1.00043	34.04199	19
42	0.02967	0.99956	0.02968	33.69351	1.00044	33.70835	18
43	0.02996	0.99955	0.02997	33.36619	1.00045	33.38118	17
44	0.03025	0.99954	0.03026	33.04517	1.00046	33.06030	16
45	0.03054	0.99953	0.03055	32.73026	1.00047	32.74554	15
46	0.03083	0.99952	0.03084	32.42129	1.00048	32.43671	14
47	0.03112	0.99951	0.03114	32.11810	1.00048	32.13366	13
48	0.03141	0.99951	0.03143	31.82052	1.00049	31.83623	12
49	0.03170	0.99950	0.03172	31.52839	1.00050	31.54425	11
50	0.03199	0.99949	0.03201	31.24158	1.00051	31.25758	10
51	0.03228	0.99948	0.03230	30.95993	1.00052	30.97607	9
52	0.03257	0.99947	0.03259	30.68331	1.00053	30.69960	8
53	0.03286	0.99946	0.03288	30.41158	1.00054	30.42802	7
54	0.03316	0.99945	0.03317	30.14462	1.00055	30.16120	6
55	0.03345	0.99944	0.03346	29.88230	1.00056	29.89903	5
56	0.03374	0.99943	0.03376	29.62450	1.00057	29.64137	4
57	0.03403	0.99942	0.03405	29.37111	1.00058	29.38812	3
58	0.03432	0.99941	0.03434	29.12200	1.00059	29.13917	2
59	0.03461	0.99940	0.03463	28.87709	1.00060	28.89440	1
60	0.03490	0.99939	0.03492	28.63625	1.00061	28.65371	0
	Cosin.	Sin.	Cotg.	Tang.	Cosec.	Sec.	

	Sin.	Cosin.	Tang.	Cotg.	Sec.	Cosec.	
0	0.05234	0.99863	0.05241	19.08114	1.00137	19.10732	60
1	0.05263	0.99861	0.05270	18.97552	1.00139	19.00185	59
2	0.05292	0.99860	0.05299	18.87107	1.00140	18.89754	58
3	0.05321	0.99858	0.05328	18.76775	1.00142	18.79438	57
4	0.05350	0.99857	0.05357	18.66556	1.00143	18.69233	56
5	0.05379	0.99855	0.05387	18.56447	1.00145	18.59139	55
6	0.05408	0.99854	0.05416	18.46447	1.00147	18.49153	54
7	0.05437	0.99852	0.05445	18.36554	1.00148	18.39274	53
8	0.05466	0.99851	0.05474	18.26765	1.00150	18.29500	52
9	0.05495	0.99849	0.05503	18.17081	1.00151	18.19830	51
10	0.05524	0.99847	0.05533	18.07498	1.00153	18.10262	50
11	0.05553	0.99846	0.05562	17.98015	1.00155	18.00794	49
12	0.05582	0.99844	0.05591	17.88631	1.00156	17.91424	48
13	0.05611	0.99842	0.05620	17.79344	1.00158	17.82152	47
14	0.05640	0.99841	0.05649	17.70153	1.00159	17.72975	46
15	0.05669	0.99839	0.05678	17.61056	1.00161	17.63893	45
16	0.05698	0.99838	0.05708	17.52052	1.00163	17.54903	44
17	0.05727	0.99836	0.05737	17.43139	1.00164	17.46005	43
18	0.05756	0.99834	0.05766	17.34315	1.00166	17.37196	42
19	0.05785	0.99833	0.05795	17.25581	1.00168	17.28476	41
20	0.05814	0.99831	0.05824	17.16934	1.00169	17.19843	40
21	0.05844	0.99829	0.05854	17.08372	1.00171	17.11297	39
22	0.05873	0.99827	0.05883	16.99896	1.00173	17.02835	38
23	0.05902	0.99826	0.05912	16.91503	1.00175	16.94456	37
24	0.05931	0.99824	0.05941	16.83191	1.00176	16.86159	36
25	0.05960	0.99822	0.05970	16.74961	1.00178	16.77944	35
26	0.05989	0.99821	0.05999	16.66811	1.00180	16.69808	34
27	0.06018	0.99819	0.06029	16.58740	1.00182	16.61751	33
28	0.06047	0.99817	0.06058	16.50746	1.00183	16.53772	32
29	0.06076	0.99815	0.06087	16.42828	1.00185	16.45869	31
30	0.06105	0.99813	0.06116	16.34986	1.00187	16.38041	30
31	0.06134	0.99812	0.06145	16.27217	1.00189	16.30287	29
32	0.06163	0.99810	0.06175	16.19525	1.00190	16.22607	28
33	0.06192	0.99808	0.06204	16.11900	1.00192	16.14999	27
34	0.06221	0.99806	0.06233	16.04348	1.00194	16.07462	26
35	0.06250	0.99804	0.06262	15.96867	1.00196	15.99995	25
36	0.06279	0.99803	0.06291	15.89454	1.00198	15.92597	24
37	0.06308	0.99801	0.06321	15.82110	1.00200	15.85268	23
38	0.06337	0.99799	0.06350	15.74834	1.00201	15.78005	22
39	0.06366	0.99797	0.06379	15.67623	1.00203	15.70810	21
40	0.06395	0.99795	0.06408	15.60478	1.00205	15.63679	20
41	0.06424	0.99793	0.06438	15.53398	1.00207	15.56613	19
42	0.06453	0.99792	0.06467	15.46381	1.00209	15.49611	18
43	0.06482	0.99790	0.06496	15.39428	1.00211	15.42672	17
44	0.06511	0.99788	0.06525	15.32536	1.00213	15.35795	16
45	0.06540	0.99786	0.06554	15.25705	1.00215	15.28979	15
46	0.06569	0.99784	0.06584	15.18935	1.00216	15.22223	14
47	0.06598	0.99782	0.06613	15.12224	1.00218	15.15527	13
48	0.06627	0.99780	0.06642	15.05572	1.00220	15.08890	12
49	0.06656	0.99778	0.06671	14.98978	1.00222	15.02310	11
50	0.06685	0.99776	0.06700	14.92442	1.00224	14.95788	10
51	0.06714	0.99774	0.06730	14.85962	1.00226	14.89323	9
52	0.06743	0.99772	0.06759	14.79537	1.00228	14.82913	8
53	0.06773	0.99770	0.06788	14.73168	1.00230	14.76558	7
54	0.06802	0.99768	0.06817	14.66853	1.00232	14.70258	6
55	0.06831	0.99766	0.06847	14.60592	1.00234	14.64011	5
56	0.06860	0.99764	0.06876	14.54383	1.00236	14.57817	4
57	0.06889	0.99762	0.06905	14.48227	1.00238	14.51977	3
58	0.06918	0.99760	0.06934	14.42123	1.00240	14.45586	2
59	0.06947	0.99758	0.06963	14.36070	1.00242	14.39547	1
60	0.06976	0.99756	0.06993	14.30067	1.00244	14.33559	0
	Cosin.	Sin.	Cotg.	Tang.	Cosec.	Sec.	

	Sin.	Cosin.	Tang.	Cotg.	Sec.	Cosec.	
0	0.06976	0.99736	0.06993	14.30067	1.00244	14.33559	60
1	0.07005	0.99734	0.07022	14.24113	1.00246	14.27620	59
2	0.07034	0.99732	0.07051	14.18209	1.00248	14.21730	58
3	0.07063	0.99730	0.07080	14.12354	1.00250	14.15889	57
4	0.07092	0.99748	0.07110	14.06546	1.00252	14.10096	56
5	0.07121	0.99746	0.07139	14.00786	1.00254	14.04350	55
6	0.07150	0.99744	0.07168	13.95072	1.00257	13.98651	54
7	0.07179	0.99742	0.07197	13.89405	1.00259	13.92999	53
8	0.07208	0.99740	0.07227	13.83783	1.00261	13.87391	52
9	0.07237	0.99738	0.07256	13.78206	1.00263	13.81829	51
10	0.07266	0.99736	0.07285	13.72674	1.00265	13.76311	50
11	0.07295	0.99734	0.07314	13.67186	1.00267	13.70838	49
12	0.07324	0.99731	0.07344	13.61741	1.00269	13.65408	48
13	0.07353	0.99729	0.07373	13.56339	1.00271	13.60021	47
14	0.07382	0.99727	0.07402	13.50980	1.00274	13.54676	46
15	0.07411	0.99725	0.07431	13.45663	1.00276	13.49373	45
16	0.07440	0.99723	0.07461	13.40387	1.00278	13.44112	44
17	0.07469	0.99721	0.07490	13.35152	1.00280	13.38891	43
18	0.07498	0.99719	0.07519	13.29957	1.00282	13.33712	42
19	0.07527	0.99716	0.07548	13.24803	1.00284	13.28572	41
20	0.07556	0.99714	0.07578	13.19688	1.00287	13.23472	40
21	0.07585	0.99712	0.07607	13.14613	1.00289	13.18411	39
22	0.07614	0.99710	0.07636	13.09576	1.00291	13.13388	38
23	0.07643	0.99708	0.07665	13.04577	1.00293	13.08404	37
24	0.07672	0.99705	0.07695	12.99616	1.00296	13.03458	36
25	0.07701	0.99703	0.07724	12.94692	1.00298	12.98549	35
26	0.07730	0.99701	0.07753	12.89806	1.00300	12.93677	34
27	0.07759	0.99699	0.07782	12.84956	1.00302	12.88841	33
28	0.07788	0.99696	0.07812	12.80142	1.00305	12.84042	32
29	0.07817	0.99694	0.07841	12.75363	1.00307	12.79278	31
30	0.07846	0.99692	0.07870	12.70620	1.00309	12.74549	30
31	0.07875	0.99689	0.07899	12.65912	1.00312	12.69856	29
32	0.07904	0.99687	0.07929	12.61239	1.00314	12.65197	28
33	0.07933	0.99685	0.07958	12.56600	1.00316	12.60572	27
34	0.07962	0.99683	0.07987	12.51994	1.00318	12.55981	26
35	0.07991	0.99680	0.08017	12.47422	1.00321	12.51424	25
36	0.08020	0.99678	0.08046	12.42883	1.00323	12.46900	24
37	0.08049	0.99676	0.08075	12.38377	1.00326	12.42408	23
38	0.08078	0.99673	0.08104	12.33903	1.00328	12.37948	22
39	0.08107	0.99671	0.08134	12.29461	1.00330	12.33521	21
40	0.08136	0.99668	0.08163	12.25051	1.00333	12.29125	20
41	0.08165	0.99666	0.08192	12.20672	1.00335	12.24761	19
42	0.08194	0.99664	0.08221	12.16324	1.00337	12.20427	18
43	0.08223	0.99661	0.08251	12.12006	1.00340	12.16125	17
44	0.08252	0.99659	0.08280	12.07719	1.00342	12.11852	16
45	0.08281	0.99657	0.08309	12.03462	1.00345	12.07610	15
46	0.08310	0.99654	0.08339	11.99235	1.00347	12.03397	14
47	0.08339	0.99652	0.08368	11.95037	1.00349	11.99214	13
48	0.08368	0.99649	0.08397	11.90868	1.00352	11.95059	12
49	0.08397	0.99647	0.08426	11.86728	1.00354	11.90934	11
50	0.08426	0.99644	0.08456	11.82617	1.00357	11.86837	10
51	0.08455	0.99642	0.08485	11.78533	1.00359	11.82768	9
52	0.08484	0.99639	0.08514	11.74478	1.00362	11.78727	8
53	0.08513	0.99637	0.08544	11.70450	1.00364	11.74714	7
54	0.08542	0.99635	0.08573	11.66450	1.00367	11.70728	6
55	0.08571	0.99632	0.08602	11.62476	1.00369	11.66769	5
56	0.08600	0.99630	0.08632	11.58529	1.00372	11.62837	4
57	0.08629	0.99627	0.08661	11.54609	1.00374	11.58932	3
58	0.08658	0.99625	0.08690	11.50715	1.00377	11.55052	2
59	0.08687	0.99622	0.08720	11.46847	1.00379	11.51199	1
60	0.08716	0.99619	0.08749	11.43005	1.00382	11.47371	0
	Cosin.	Sin.	Cotg.	Tang.	Cosec.	Sec.	

	Sin.	Cosin.	Tang.	Cotg.	Sec.	Cosec.	
0	0.08716	0.99619	0.08749	11.43005	1.00382	11.47371	60
1	0.08745	0.99617	0.08778	11.39188	1.00385	11.43569	59
2	0.08774	0.99614	0.08807	11.35397	1.00387	11.39792	58
3	0.08803	0.99612	0.08837	11.31630	1.00390	11.36040	57
4	0.08831	0.99609	0.08866	11.27889	1.00392	11.32313	56
5	0.08860	0.99607	0.08895	11.24171	1.00395	11.28610	55
6	0.08889	0.99604	0.08925	11.20478	1.00397	11.24932	54
7	0.08918	0.99602	0.08954	11.16809	1.00400	11.21277	53
8	0.08947	0.99599	0.08983	11.13164	1.00403	11.17646	52
9	0.08976	0.99596	0.09013	11.09542	1.00405	11.14039	51
10	0.09005	0.99594	0.09042	11.05943	1.00408	11.10455	50
11	0.09034	0.99591	0.09071	11.02368	1.00411	11.06894	49
12	0.09063	0.99588	0.09101	10.98815	1.00413	11.03356	48
13	0.09092	0.99586	0.09130	10.95285	1.00416	10.99841	47
14	0.09121	0.99583	0.09159	10.91777	1.00419	10.96348	46
15	0.09150	0.99580	0.09189	10.88292	1.00421	10.92877	45
16	0.09179	0.99578	0.09218	10.84829	1.00424	10.89428	44
17	0.09208	0.99575	0.09247	10.81387	1.00427	10.86001	43
18	0.09237	0.99572	0.09277	10.77967	1.00429	10.82596	42
19	0.09266	0.99570	0.09306	10.74569	1.00432	10.79212	41
20	0.09295	0.99567	0.09335	10.71191	1.00435	10.75849	40
21	0.09324	0.99564	0.09365	10.67835	1.00438	10.72507	39
22	0.09353	0.99562	0.09394	10.64499	1.00440	10.69186	38
23	0.09382	0.99559	0.09423	10.61184	1.00443	10.65885	37
24	0.09411	0.99556	0.09453	10.57889	1.00446	10.62605	36
25	0.09440	0.99553	0.09482	10.54615	1.00449	10.59346	35
26	0.09469	0.99551	0.09511	10.51361	1.00451	10.56106	34
27	0.09498	0.99548	0.09541	10.48126	1.00454	10.52886	33
28	0.09527	0.99545	0.09570	10.44911	1.00457	10.49685	32
29	0.09556	0.99542	0.09600	10.41716	1.00460	10.46505	31
30	0.09585	0.99540	0.09629	10.38540	1.00463	10.43343	30
31	0.09614	0.99537	0.09658	10.35383	1.00465	10.40201	29
32	0.09642	0.99534	0.09688	10.32245	1.00468	10.37077	28
33	0.09671	0.99531	0.09717	10.29126	1.00471	10.33973	27
34	0.09700	0.99528	0.09746	10.26025	1.00474	10.30887	26
35	0.09729	0.99526	0.09776	10.22943	1.00477	10.27819	25
36	0.09758	0.99523	0.09805	10.19879	1.00480	10.24770	24
37	0.09787	0.99520	0.09834	10.16833	1.00482	10.21739	23
38	0.09816	0.99517	0.09864	10.13805	1.00485	10.18725	22
39	0.09845	0.99514	0.09893	10.10795	1.00488	10.15730	21
40	0.09874	0.99511	0.09923	10.07803	1.00491	10.12752	20
41	0.09903	0.99508	0.09952	10.04828	1.00494	10.09792	19
42	0.09932	0.99506	0.09981	10.01871	1.00497	10.06849	18
43	0.09961	0.99503	0.10011	9.98930	1.00500	10.03923	17
44	0.09990	0.99500	0.10040	9.96007	1.00503	10.01015	16
45	0.10019	0.99497	0.10069	9.93101	1.00506	9.98123	15
46	0.10048	0.99494	0.10097	9.90211	1.00509	9.95248	14
47	0.10077	0.99491	0.10128	9.87338	1.00512	9.92389	13
48	0.10106	0.99488	0.10158	9.84482	1.00515	9.89547	12
49	0.10135	0.99485	0.10187	9.81641	1.00518	9.86722	11
50	0.10164	0.99482	0.10216	9.78817	1.00521	9.83912	10
51	0.10192	0.99479	0.10246	9.76009	1.00524	9.81119	9
52	0.10221	0.99476	0.10275	9.73217	1.00527	9.78341	8
53	0.10250	0.99473	0.10305	9.70441	1.00530	9.75579	7
54	0.10279	0.99470	0.10334	9.67680	1.00533	9.72833	6
55	0.10308	0.99467	0.10363	9.64935	1.00536	9.70103	5
56	0.10337	0.99464	0.10393	9.62205	1.00539	9.67387	4
57	0.10366	0.99461	0.10422	9.59490	1.00542	9.64687	3
58	0.10395	0.99458	0.10452	9.56791	1.00545	9.62002	2
59	0.10424	0.99455	0.10481	9.54106	1.00548	9.59332	1
60	0.10453	0.99452	0.10510	9.51436	1.00551	9.56677	0
	Cosin.	Sin.	Cotg.	Tang.	Cosec.	Sec.	

	Sin.	Cosin.	Tang.	Cotg.	Sec.	Cosec.	
0	0.10453	0.99452	0.10510	9.51436	1.00551	9.56677	60
1	0.10482	0.99449	0.10540	9.48781	1.00554	9.54037	59
2	0.10511	0.99446	0.10569	9.46141	1.00557	9.51411	58
3	0.10540	0.99443	0.10599	9.43515	1.00560	9.48800	57
4	0.10569	0.99440	0.10628	9.40904	1.00563	9.46203	56
5	0.10597	0.99437	0.10657	9.38307	1.00566	9.43620	55
6	0.10626	0.99434	0.10687	9.35724	1.00569	9.41052	54
7	0.10655	0.99431	0.10716	9.33155	1.00573	9.38497	53
8	0.10684	0.99428	0.10746	9.30599	1.00576	9.35957	52
9	0.10713	0.99424	0.10775	9.28058	1.00579	9.33430	51
10	0.10742	0.99421	0.10805	9.25530	1.00582	9.30917	50
11	0.10771	0.99418	0.10834	9.23016	1.00585	9.28417	49
12	0.10800	0.99415	0.10863	9.20516	1.00588	9.25931	48
13	0.10829	0.99412	0.10893	9.18028	1.00592	9.23459	47
14	0.10858	0.99409	0.10922	9.15554	1.00595	9.20999	46
15	0.10887	0.99406	0.10952	9.13093	1.00598	9.18553	45
16	0.10916	0.99402	0.10981	9.10646	1.00601	9.16120	44
17	0.10945	0.99399	0.11011	9.08211	1.00604	9.13699	43
18	0.10973	0.99396	0.11040	9.05789	1.00608	9.11292	42
19	0.11002	0.99393	0.11070	9.03379	1.00611	9.08897	41
20	0.11031	0.99390	0.11099	9.00983	1.00614	9.06515	40
21	0.11060	0.99386	0.11128	8.98598	1.00617	9.04146	39
22	0.11089	0.99383	0.11158	8.96227	1.00621	9.01788	38
23	0.11118	0.99380	0.11187	8.93867	1.00624	8.99444	37
24	0.11147	0.99377	0.11217	8.91520	1.00627	8.97111	36
25	0.11176	0.99374	0.11246	8.89185	1.00630	8.94791	35
26	0.11205	0.99370	0.11276	8.86862	1.00634	8.92482	34
27	0.11234	0.99367	0.11305	8.84551	1.00637	8.90186	33
28	0.11263	0.99364	0.11335	8.82252	1.00640	8.87901	32
29	0.11291	0.99360	0.11364	8.79964	1.00644	8.85628	31
30	0.11320	0.99357	0.11394	8.77689	1.00647	8.83367	30
31	0.11349	0.99354	0.11423	8.75425	1.00650	8.81118	29
32	0.11378	0.99351	0.11452	8.73172	1.00654	8.78880	28
33	0.11407	0.99347	0.11482	8.70931	1.00657	8.76653	27
34	0.11436	0.99344	0.11511	8.68701	1.00660	8.74438	26
35	0.11465	0.99341	0.11541	8.66482	1.00664	8.72234	25
36	0.11494	0.99337	0.11570	8.64275	1.00667	8.70041	24
37	0.11523	0.99334	0.11600	8.62078	1.00671	8.67859	23
38	0.11552	0.99331	0.11629	8.59893	1.00674	8.65688	22
39	0.11580	0.99327	0.11659	8.57718	1.00677	8.63528	21
40	0.11609	0.99324	0.11688	8.55555	1.00681	8.61379	20
41	0.11638	0.99320	0.11718	8.53402	1.00684	8.59241	19
42	0.11667	0.99317	0.11747	8.51259	1.00688	8.57113	18
43	0.11696	0.99314	0.11777	8.49128	1.00691	8.54996	17
44	0.11725	0.99310	0.11806	8.47007	1.00695	8.52889	16
45	0.11754	0.99307	0.11836	8.44896	1.00698	8.50793	15
46	0.11783	0.99303	0.11865	8.42795	1.00701	8.48707	14
47	0.11812	0.99300	0.11895	8.40705	1.00705	8.46632	13
48	0.11840	0.99297	0.11924	8.38625	1.00708	8.44566	12
49	0.11869	0.99293	0.11954	8.36555	1.00712	8.42511	11
50	0.11898	0.99290	0.11983	8.34496	1.00715	8.40466	10
51	0.11927	0.99286	0.12013	8.32446	1.00719	8.38431	9
52	0.11956	0.99283	0.12042	8.30406	1.00722	8.36405	8
53	0.11985	0.99279	0.12072	8.28376	1.00726	8.34390	7
54	0.12014	0.99276	0.12101	8.26355	1.00730	8.32384	6
55	0.12043	0.99272	0.12131	8.24345	1.00733	8.30388	5
56	0.12071	0.99269	0.12160	8.22344	1.00737	8.28402	4
57	0.12100	0.99265	0.12190	8.20352	1.00740	8.26425	3
58	0.12129	0.99262	0.12219	8.18370	1.00744	8.24457	2
59	0.12158	0.99258	0.12249	8.16398	1.00747	8.22500	1
60	0.12187	0.99255	0.12278	8.14435	1.00751	8.20551	0
	Cosin.	Sin.	Cotg.	Tang.	Cosec.	Sec.	

	Sin.	Cosin.	Tang.	Cotg.	Sec.	Cosec.	
0	0.12187	0.99255	0.12278	8.14435	1.00751	8.20551	60
1	0.12216	0.99251	0.12308	8.12481	1.00755	8.18612	59
2	0.12245	0.99248	0.12338	8.10536	1.00758	8.16681	58
3	0.12274	0.99244	0.12367	8.08600	1.00762	8.14760	57
4	0.12302	0.99240	0.12397	8.06674	1.00765	8.12849	56
5	0.12331	0.99237	0.12426	8.04756	1.00769	8.10946	55
6	0.12360	0.99233	0.12456	8.02848	1.00773	8.09032	54
7	0.12389	0.99230	0.12485	8.00948	1.00776	8.07167	53
8	0.12418	0.99226	0.12515	7.99058	1.00780	8.05291	52
9	0.12447	0.99222	0.12544	7.97176	1.00784	8.03423	51
10	0.12476	0.99219	0.12574	7.95302	1.00787	8.01565	50
11	0.12504	0.99215	0.12603	7.93438	1.00791	7.99714	49
12	0.12533	0.99211	0.12633	7.91582	1.00795	7.97873	48
13	0.12562	0.99208	0.12662	7.89734	1.00798	7.96040	47
14	0.12591	0.99204	0.12692	7.87895	1.00802	7.94216	46
15	0.12620	0.99200	0.12722	7.86064	1.00806	7.92399	45
16	0.12649	0.99197	0.12751	7.84242	1.00810	7.90592	44
17	0.12678	0.99193	0.12781	7.82428	1.00813	7.88792	43
18	0.12706	0.99189	0.12810	7.80622	1.00817	7.87001	42
19	0.12735	0.99186	0.12840	7.78825	1.00821	7.85218	41
20	0.12764	0.99182	0.12869	7.77035	1.00825	7.83443	40
21	0.12793	0.99178	0.12899	7.75254	1.00828	7.81677	39
22	0.12822	0.99175	0.12929	7.73480	1.00832	7.79918	38
23	0.12851	0.99171	0.12958	7.71715	1.00836	7.78167	37
24	0.12880	0.99167	0.12988	7.69957	1.00840	7.76424	36
25	0.12908	0.99163	0.13017	7.68208	1.00844	7.74689	35
26	0.12937	0.99160	0.13047	7.66466	1.00848	7.72962	34
27	0.12966	0.99156	0.13076	7.64732	1.00851	7.71242	33
28	0.12995	0.99152	0.13106	7.63005	1.00855	7.69530	32
29	0.13024	0.99148	0.13136	7.61287	1.00859	7.67826	31
30	0.13053	0.99144	0.13165	7.59575	1.00863	7.66130	30
31	0.13081	0.99141	0.13195	7.57872	1.00867	7.64441	29
32	0.13110	0.99137	0.13224	7.56176	1.00871	7.62759	28
33	0.13139	0.99133	0.13254	7.54487	1.00875	7.61085	27
34	0.13168	0.99129	0.13284	7.52806	1.00878	7.59418	26
35	0.13197	0.99125	0.13313	7.51132	1.00882	7.57759	25
36	0.13226	0.99122	0.13343	7.49465	1.00886	7.56107	24
37	0.13254	0.99118	0.13372	7.47806	1.00890	7.54462	23
38	0.13283	0.99114	0.13402	7.46154	1.00894	7.52825	22
39	0.13312	0.99110	0.13432	7.44509	1.00898	7.51194	21
40	0.13341	0.99106	0.13461	7.42871	1.00902	7.49571	20
41	0.13370	0.99102	0.13491	7.41240	1.00906	7.47955	19
42	0.13399	0.99098	0.13521	7.39616	1.00910	7.46346	18
43	0.13427	0.99094	0.13550	7.37999	1.00914	7.44743	17
44	0.13456	0.99091	0.13580	7.36389	1.00918	7.43148	16
45	0.13485	0.99087	0.13609	7.34786	1.00922	7.41560	15
46	0.13514	0.99083	0.13639	7.33190	1.00926	7.39978	14
47	0.13543	0.99079	0.13669	7.31600	1.00930	7.38403	13
48	0.13572	0.99075	0.13698	7.30018	1.00934	7.36835	12
49	0.13600	0.99071	0.13728	7.28442	1.00938	7.35274	11
50	0.13629	0.99067	0.13758	7.26873	1.00942	7.33719	10
51	0.13658	0.99063	0.13787	7.25310	1.00946	7.32171	9
52	0.13687	0.99059	0.13817	7.23754	1.00950	7.30630	8
53	0.13716	0.99055	0.13846	7.22204	1.00954	7.29095	7
54	0.13744	0.99051	0.13876	7.20661	1.00958	7.27566	6
55	0.13773	0.99047	0.13906	7.19125	1.00962	7.26044	5
56	0.13802	0.99043	0.13935	7.17594	1.00966	7.24529	4
57	0.13831	0.99039	0.13965	7.16071	1.00970	7.23019	3
58	0.13860	0.99035	0.13995	7.14553	1.00975	7.21517	2
59	0.13889	0.99031	0.14024	7.13042	1.00979	7.20020	1
60	0.13917	0.99027	0.14054	7.11537	1.00983	7.18530	0
	Cosin.	Sin.	Cotg.	Tang.	Cosec.	Sec.	

	Sin.	Cosin.	Tang.	Cotg.	Sec.	Cosec.	
0	0.13917	0.99027	0.14054	7.11537	1.00983	7.18530	60
1	0.13946	0.99023	0.14084	7.10038	1.00987	7.17046	59
2	0.13975	0.99019	0.14113	7.08546	1.00991	7.15568	58
3	0.14004	0.99015	0.14143	7.07059	1.00995	7.14096	57
4	0.14033	0.99011	0.14173	7.05579	1.00999	7.12630	56
5	0.14061	0.99006	0.14202	7.04105	1.01004	7.11171	55
6	0.14090	0.99002	0.14232	7.02637	1.01008	7.09717	54
7	0.14119	0.98998	0.14262	7.01174	1.01012	7.08269	53
8	0.14148	0.98994	0.14291	6.99718	1.01016	7.06828	52
9	0.14177	0.98990	0.14321	6.98268	1.01020	7.05392	51
10	0.14205	0.98986	0.14351	6.96823	1.01024	7.03962	50
11	0.14234	0.98982	0.14381	6.95385	1.01029	7.02538	49
12	0.14263	0.98978	0.14410	6.93952	1.01033	7.01120	48
13	0.14292	0.98973	0.14440	6.92525	1.01037	6.99708	47
14	0.14320	0.98969	0.14470	6.91104	1.01041	6.98301	46
15	0.14349	0.98965	0.14499	6.89683	1.01046	6.96900	45
16	0.14378	0.98961	0.14529	6.88278	1.01050	6.95505	44
17	0.14407	0.98957	0.14559	6.86874	1.01054	6.94115	43
18	0.14436	0.98953	0.14588	6.85475	1.01059	6.92731	42
19	0.14464	0.98948	0.14618	6.84082	1.01063	6.91352	41
20	0.14493	0.98944	0.14648	6.82694	1.01067	6.89979	40
21	0.14522	0.98940	0.14678	6.81312	1.01071	6.88612	39
22	0.14551	0.98936	0.14707	6.79936	1.01076	6.87250	38
23	0.14580	0.98931	0.14737	6.78564	1.01080	6.85893	37
24	0.14608	0.98927	0.14767	6.77199	1.01084	6.84542	36
25	0.14637	0.98923	0.14796	6.75838	1.01089	6.83196	35
26	0.14666	0.98919	0.14826	6.74483	1.01093	6.81856	34
27	0.14695	0.98914	0.14856	6.73133	1.01097	6.80521	33
28	0.14723	0.98910	0.14886	6.71789	1.01102	6.79191	32
29	0.14752	0.98906	0.14915	6.70450	1.01106	6.77866	31
30	0.14781	0.98902	0.14945	6.69116	1.01111	6.76547	30
31	0.14810	0.98897	0.14975	6.67787	1.01115	6.75233	29
32	0.14838	0.98893	0.15005	6.66463	1.01119	6.73924	28
33	0.14867	0.98889	0.15034	6.65144	1.01124	6.72620	27
34	0.14896	0.98884	0.15064	6.63831	1.01128	6.71321	26
35	0.14925	0.98880	0.15094	6.62523	1.01133	6.70027	25
36	0.14954	0.98876	0.15124	6.61219	1.01137	6.68738	24
37	0.14982	0.98871	0.15153	6.59921	1.01142	6.67454	23
38	0.15011	0.98867	0.15183	6.58627	1.01146	6.66176	22
39	0.15040	0.98863	0.15213	6.57339	1.01151	6.64902	21
40	0.15069	0.98858	0.15243	6.56055	1.01155	6.63633	20
41	0.15097	0.98854	0.15272	6.54777	1.01159	6.62369	19
42	0.15126	0.98849	0.15302	6.53503	1.01164	6.61110	18
43	0.15155	0.98845	0.15332	6.52234	1.01169	6.59855	17
44	0.15184	0.98841	0.15362	6.50970	1.01173	6.58606	16
45	0.15212	0.98836	0.15391	6.49710	1.01178	6.57361	15
46	0.15241	0.98832	0.15421	6.48456	1.01182	6.56121	14
47	0.15270	0.98827	0.15451	6.47206	1.01187	6.54886	13
48	0.15299	0.98823	0.15481	6.45961	1.01191	6.53655	12
49	0.15327	0.98818	0.15511	6.44720	1.01196	6.52429	11
50	0.15356	0.98814	0.15540	6.43484	1.01200	6.51208	10
51	0.15385	0.98809	0.15570	6.42253	1.01205	6.49991	9
52	0.15414	0.98805	0.15600	6.41026	1.01209	6.48779	8
53	0.15442	0.98800	0.15630	6.39804	1.01214	6.47572	7
54	0.15471	0.98796	0.15660	6.38587	1.01219	6.46369	6
55	0.15500	0.98791	0.15689	6.37374	1.01223	6.45171	5
56	0.15529	0.98787	0.15719	6.36165	1.01228	6.43977	4
57	0.15557	0.98782	0.15749	6.34961	1.01233	6.42787	3
58	0.15586	0.98778	0.15779	6.33761	1.01237	6.41602	2
59	0.15615	0.98773	0.15809	6.32566	1.01242	6.40422	1
60	0.15643	0.98769	0.15838	6.31375	1.01247	6.39245	0
	Cosin.	Sin.	Cotg.	Tang.	Cosec.	Sec.	

	Sin.	Cosin.	Tang.	Cotg.	Sec.	Cosec.	
0	0.15643	0.98769	0.15838	6.31375	1.01247	6.39245	60
1	0.15672	0.98764	0.15868	6.30189	1.01251	6.38073	59
2	0.15701	0.98760	0.15898	6.29007	1.01256	6.36906	58
3	0.15730	0.98755	0.15928	6.27829	1.01261	6.35743	57
4	0.15758	0.98751	0.15958	6.26655	1.01265	6.34584	56
5	0.15787	0.98746	0.15988	6.25486	1.01270	6.33429	55
6	0.15816	0.98741	0.16017	6.24321	1.01275	6.32279	54
7	0.15845	0.98737	0.16047	6.23160	1.01279	6.31133	53
8	0.15873	0.98732	0.16077	6.22003	1.01284	6.29991	52
9	0.15902	0.98728	0.16107	6.20851	1.01289	6.28853	51
10	0.15931	0.98723	0.16137	6.19703	1.01294	6.27719	50
11	0.15959	0.98718	0.16167	6.17559	1.01298	6.26590	49
12	0.15988	0.98714	0.16196	6.17419	1.01303	6.25464	48
13	0.16017	0.98709	0.16226	6.16283	1.01308	6.24343	47
14	0.16046	0.98704	0.16256	6.15151	1.01313	6.23226	46
15	0.16074	0.98700	0.16286	6.14023	1.01318	6.22113	45
16	0.16103	0.98695	0.16316	6.12899	1.01322	6.21004	44
17	0.16132	0.98690	0.16346	6.11779	1.01327	6.19898	43
18	0.16160	0.98686	0.16376	6.10664	1.01332	6.18797	42
19	0.16189	0.98681	0.16405	6.09552	1.01337	6.17700	41
20	0.16218	0.98676	0.16435	6.08444	1.01342	6.16607	40
21	0.16246	0.98671	0.16465	6.07340	1.01346	6.15517	39
22	0.16275	0.98667	0.16495	6.06240	1.01351	6.14432	38
23	0.16304	0.98662	0.16525	6.05143	1.01356	6.13350	37
24	0.16333	0.98657	0.16555	6.04051	1.01361	6.11273	36
25	0.16361	0.98652	0.16585	6.02962	1.01366	6.11199	35
26	0.16390	0.98648	0.16615	6.01878	1.01371	6.10129	34
27	0.16419	0.98643	0.16645	6.00797	1.01376	6.09062	33
28	0.16447	0.98638	0.16674	5.99720	1.01381	6.08000	32
29	0.16476	0.98633	0.16704	5.98646	1.01386	6.06941	31
30	0.16505	0.98629	0.16734	5.97576	1.01391	6.05886	30
31	0.16533	0.98624	0.16764	5.96510	1.01395	6.04834	29
32	0.16562	0.98619	0.16794	5.95448	1.01400	6.03787	28
33	0.16591	0.98614	0.16824	5.94390	1.01405	6.02743	27
34	0.16620	0.98609	0.16854	5.93335	1.01410	6.01702	26
35	0.16648	0.98604	0.16884	5.92283	1.01415	6.00666	25
36	0.16677	0.98600	0.16914	5.91236	1.01420	5.99633	24
37	0.16706	0.98595	0.16944	5.90191	1.01425	5.98603	23
38	0.16734	0.98590	0.16974	5.89151	1.01430	5.97577	22
39	0.16763	0.98585	0.17004	5.88114	1.01435	5.96555	21
40	0.16792	0.98580	0.17033	5.87080	1.01440	5.95536	20
41	0.16820	0.98575	0.17063	5.86051	1.01445	5.94521	19
42	0.16849	0.98570	0.17093	5.85024	1.01450	5.93506	18
43	0.16878	0.98565	0.17123	5.84001	1.01455	5.92501	17
44	0.16906	0.98561	0.17153	5.82982	1.01460	5.91496	16
45	0.16935	0.98556	0.17183	5.81966	1.01466	5.90495	15
46	0.16964	0.98551	0.17213	5.80953	1.01471	5.89497	14
47	0.16992	0.98546	0.17243	5.79944	1.01476	5.88502	13
48	0.17021	0.98541	0.17273	5.78938	1.01481	5.87511	12
49	0.17050	0.98536	0.17303	5.77936	1.01486	5.86524	11
50	0.17078	0.98531	0.17333	5.76937	1.01491	5.85539	10
51	0.17107	0.98526	0.17363	5.75941	1.01496	5.84558	9
52	0.17136	0.98521	0.17393	5.74949	1.01501	5.83581	8
53	0.17164	0.98516	0.17423	5.73960	1.01506	5.82606	7
54	0.17193	0.98511	0.17453	5.72974	1.01512	5.81635	6
55	0.17222	0.98506	0.17483	5.71992	1.01517	5.80667	5
56	0.17250	0.98501	0.17513	5.71013	1.01522	5.79703	4
57	0.17279	0.98496	0.17543	5.70037	1.01527	5.78742	3
58	0.17308	0.98491	0.17573	5.69064	1.01532	5.77783	2
59	0.17336	0.98486	0.17603	5.68094	1.01537	5.76829	1
60	0.17365	0.98481	0.17633	5.67128	1.01543	5.75877	0
	Cosin.	Sin.	Cotg.	Tang.	Cosec.	Sec.	

	Sin.	Cosin.	Tang.	Cotg.	Sec.	Cosec.	
0	0.17365	0.98481	0.17633	5.67128	1.01543	5.75877	60
1	0.17393	0.98476	0.17663	5.66165	1.01548	5.74929	59
2	0.17422	0.98471	0.17693	5.65205	1.01553	5.73983	58
3	0.17451	0.98466	0.17723	5.64248	1.01558	5.73041	57
4	0.17479	0.98461	0.17753	5.63295	1.01564	5.72102	56
5	0.17508	0.98455	0.17783	5.62344	1.01569	5.71166	55
6	0.17537	0.98450	0.17813	5.61397	1.01574	5.70234	54
7	0.17565	0.98445	0.17843	5.60452	1.01579	5.69304	53
8	0.17594	0.98440	0.17873	5.59511	1.01585	5.68377	52
9	0.17623	0.98435	0.17903	5.58573	1.01590	5.67454	51
10	0.17651	0.98430	0.17933	5.57638	1.01595	5.66533	50
11	0.17680	0.98425	0.17963	5.56706	1.01601	5.65616	49
12	0.17708	0.98420	0.17993	5.55777	1.01606	5.64701	48
13	0.17737	0.98414	0.18023	5.54851	1.01611	5.63790	47
14	0.17766	0.98409	0.18053	5.53927	1.01616	5.62881	46
15	0.17794	0.98404	0.18083	5.53007	1.01622	5.61976	45
16	0.17823	0.98399	0.18113	5.52090	1.01627	5.61073	44
17	0.17852	0.98394	0.18143	5.51176	1.01633	5.60174	43
18	0.17880	0.98389	0.18173	5.50264	1.01638	5.59277	42
19	0.17909	0.98383	0.18203	5.49356	1.01643	5.58383	41
20	0.17937	0.98378	0.18233	5.48451	1.01649	5.57493	40
21	0.17966	0.98373	0.18263	5.47548	1.01654	5.56605	39
22	0.17995	0.98368	0.18293	5.46648	1.01659	5.55720	38
23	0.18023	0.98362	0.18323	5.45751	1.01665	5.54837	37
24	0.18052	0.98357	0.18353	5.44857	1.01670	5.53958	36
25	0.18081	0.98352	0.18384	5.43966	1.01676	5.53081	35
26	0.18109	0.98347	0.18414	5.43078	1.01681	5.52208	34
27	0.18138	0.98341	0.18444	5.42192	1.01687	5.51337	33
28	0.18166	0.98336	0.18474	5.41307	1.01692	5.50468	32
29	0.18195	0.98331	0.18504	5.40429	1.01698	5.49603	31
30	0.18224	0.98325	0.18534	5.39552	1.01703	5.48740	30
31	0.18252	0.98320	0.18564	5.38677	1.01709	5.47881	29
32	0.18281	0.98315	0.18594	5.37805	1.01714	5.47023	28
33	0.18309	0.98310	0.18624	5.36936	1.01720	5.46169	27
34	0.18338	0.98304	0.18654	5.36070	1.01725	5.45317	26
35	0.18367	0.98299	0.18684	5.35206	1.01731	5.44468	25
36	0.18395	0.98294	0.18714	5.34345	1.01736	5.43622	24
37	0.18424	0.98288	0.18745	5.33487	1.01742	5.42778	23
38	0.18452	0.98283	0.18775	5.32631	1.01747	5.41937	22
39	0.18481	0.98277	0.18805	5.31778	1.01753	5.41099	21
40	0.18509	0.98272	0.18835	5.30928	1.01758	5.40263	20
41	0.18538	0.98267	0.18865	5.30080	1.01764	5.39430	19
42	0.18567	0.98261	0.18895	5.29235	1.01769	5.38600	18
43	0.18595	0.98256	0.18925	5.28393	1.01775	5.37772	17
44	0.18624	0.98250	0.18955	5.27553	1.01781	5.36947	16
45	0.18652	0.98245	0.18986	5.26715	1.01786	5.36124	15
46	0.18681	0.98240	0.19016	5.25880	1.01792	5.35304	14
47	0.18710	0.98234	0.19046	5.25048	1.01798	5.34486	13
48	0.18738	0.98229	0.19076	5.24218	1.01803	5.33671	12
49	0.18767	0.98223	0.19106	5.23391	1.01809	5.32859	11
50	0.18795	0.98218	0.19136	5.22566	1.01815	5.32049	10
51	0.18824	0.98212	0.19166	5.21744	1.01820	5.31241	9
52	0.18852	0.98207	0.19197	5.20925	1.01826	5.30436	8
53	0.18881	0.98201	0.19227	5.20107	1.01832	5.29634	7
54	0.18910	0.98196	0.19257	5.19293	1.01837	5.28833	6
55	0.18938	0.98190	0.19287	5.18480	1.01843	5.28036	5
56	0.18967	0.98185	0.19317	5.17671	1.01849	5.27241	4
57	0.18995	0.98179	0.19347	5.16863	1.01854	5.26448	3
58	0.19024	0.98174	0.19378	5.16058	1.01860	5.25658	2
59	0.19052	0.98168	0.19408	5.15256	1.01866	5.24870	1
60	0.19081	0.98163	0.19438	5.14455	1.01872	5.24084	0
	Cosin.	Sin.	Cotg.	Tang.	Cosec.	Sec.	

	Sin.	Cosin.	Tang.	Cotg.	Sec.	Cosec.	
0	0.19081	0.98163	0.19438	5.14455	1.01872	5.24084	60
1	0.19109	0.98157	0.19468	5.13658	1.01877	5.23301	59
2	0.19138	0.98152	0.19498	5.12862	1.01883	5.22520	58
3	0.19167	0.98146	0.19529	5.12069	1.01889	5.21742	57
4	0.19195	0.98140	0.19559	5.11279	1.01895	5.20966	56
5	0.19224	0.98135	0.19589	5.10490	1.01901	5.20193	55
6	0.19252	0.98129	0.19619	5.09704	1.01906	5.19421	54
7	0.19281	0.98124	0.19649	5.08921	1.01912	5.18652	53
8	0.19309	0.98118	0.19680	5.08139	1.01918	5.17886	52
9	0.19338	0.98112	0.19710	5.07360	1.01924	5.17121	51
10	0.19366	0.98107	0.19740	5.06584	1.01930	5.16359	50
11	0.19395	0.98101	0.19770	5.05809	1.01936	5.15599	49
12	0.19424	0.98096	0.19801	5.05037	1.01941	5.14842	48
13	0.19452	0.98090	0.19831	5.04267	1.01947	5.14087	47
14	0.19481	0.98084	0.19861	5.03499	1.01953	5.13334	46
15	0.19509	0.98079	0.19891	5.02734	1.01959	5.12583	45
16	0.19538	0.98073	0.19921	5.01971	1.01965	5.11835	44
17	0.19566	0.98067	0.19952	5.01210	1.01971	5.11088	43
18	0.19595	0.98061	0.19982	5.00451	1.01977	5.10344	42
19	0.19623	0.98056	0.20012	4.99695	1.01983	5.09602	41
20	0.19652	0.98050	0.20042	4.98940	1.01989	5.08863	40
21	0.19680	0.98044	0.20073	4.98188	1.01995	5.08125	39
22	0.19709	0.98039	0.20103	4.97438	1.02001	5.07390	38
23	0.19737	0.98033	0.20133	4.96690	1.02007	5.06657	37
24	0.19766	0.98027	0.20164	4.95945	1.02013	5.05926	36
25	0.19794	0.98021	0.20194	4.95201	1.02019	5.05197	35
26	0.19823	0.98016	0.20224	4.94460	1.02025	5.04471	34
27	0.19851	0.98010	0.20254	4.93721	1.02031	5.03746	33
28	0.19880	0.98004	0.20285	4.92984	1.02037	5.03024	32
29	0.19908	0.97998	0.20315	4.92249	1.02043	5.02303	31
30	0.19937	0.97992	0.20345	4.91516	1.02048	5.01575	30
31	0.19965	0.97987	0.20376	4.90785	1.02055	5.00869	29
32	0.19994	0.97981	0.20406	4.90056	1.02061	5.00155	28
33	0.20022	0.97975	0.20436	4.89330	1.02067	4.99443	27
34	0.20051	0.97969	0.20466	4.88605	1.02073	4.98733	26
35	0.20079	0.97963	0.20497	4.87882	1.02079	4.98025	25
36	0.20108	0.97958	0.20527	4.87162	1.02085	4.97320	24
37	0.20136	0.97952	0.20557	4.86444	1.02081	4.96616	23
38	0.20165	0.97946	0.20588	4.85727	1.02097	4.95914	22
39	0.20193	0.97940	0.20618	4.85013	1.02103	4.95215	21
40	0.20222	0.97934	0.20648	4.84300	1.02110	4.94517	20
41	0.20250	0.97928	0.20679	4.83590	1.02116	4.93821	19
42	0.20279	0.97922	0.20709	4.82882	1.02122	4.93128	18
43	0.20307	0.97916	0.20739	4.82175	1.02128	4.92436	17
44	0.20336	0.97910	0.20770	4.81471	1.02134	4.91746	16
45	0.20364	0.97905	0.20800	4.80769	1.02140	4.91058	15
46	0.20393	0.97899	0.20830	4.80068	1.02146	4.90373	14
47	0.20421	0.97893	0.20861	4.79370	1.02153	4.89689	13
48	0.20450	0.97887	0.20891	4.78673	1.02159	4.89007	12
49	0.20478	0.97881	0.20921	4.77978	1.02165	4.88327	11
50	0.20507	0.97875	0.20952	4.77286	1.02171	4.87649	10
51	0.20535	0.97869	0.20982	4.76595	1.02178	4.86973	9
52	0.20563	0.97863	0.21013	4.75906	1.02184	4.86299	8
53	0.20592	0.97857	0.21043	4.75219	1.02190	4.85627	7
54	0.20620	0.97851	0.21073	4.74534	1.02196	4.84956	6
55	0.20649	0.97845	0.21104	4.73851	1.02203	4.84288	5
56	0.20677	0.97839	0.21134	4.73170	1.02209	4.83621	4
57	0.20706	0.97833	0.21164	4.72490	1.02215	4.82956	3
58	0.20734	0.97827	0.21195	4.71813	1.02221	4.82294	2
59	0.20763	0.97821	0.21225	4.71137	1.02228	4.81633	1
60	0.20791	0.97815	0.21256	4.70463	1.02234	4.80973	0
	Cosin.	Sin.	Cotg.	Tang.	Cosec.	Sec.	

	Sin.	Cosin.	Tang.	Cotg.	Sec.	Cosec.	
0	0.20791	0.97815	0.21256	4.70463	1.02234	4.80973	60
1	0.20820	0.97809	0.21286	4.69791	1.02240	4.80316	59
2	0.20848	0.97803	0.21316	4.69121	1.02247	4.79661	58
3	0.20877	0.97797	0.21347	4.68452	1.02253	4.79007	57
4	0.20905	0.97791	0.21377	4.67786	1.02259	4.78355	56
5	0.20933	0.97784	0.21408	4.67121	1.02266	4.77705	55
6	0.20962	0.97778	0.21438	4.66458	1.02272	4.77057	54
7	0.20990	0.97772	0.21469	4.65797	1.02279	4.76411	53
8	0.21019	0.97766	0.21499	4.65138	1.02285	4.75766	52
9	0.21047	0.97760	0.21529	4.64480	1.02291	4.75123	51
10	0.21076	0.97754	0.21560	4.63825	1.02298	4.74482	50
11	0.21104	0.97748	0.21590	4.63171	1.02304	4.73843	49
12	0.21132	0.97742	0.21621	4.62518	1.02311	4.73205	48
13	0.21161	0.97735	0.21651	4.61868	1.02317	4.72569	47
14	0.21189	0.97729	0.21682	4.61219	1.02323	4.71935	46
15	0.21218	0.97723	0.21712	4.60572	1.02330	4.71303	45
16	0.21246	0.97717	0.21743	4.59927	1.02336	4.70673	44
17	0.21275	0.97711	0.21773	4.59283	1.02343	4.70044	43
18	0.21303	0.97705	0.21804	4.58641	1.02349	4.69417	42
19	0.21331	0.97698	0.21834	4.58001	1.02356	4.68791	41
20	0.21360	0.97692	0.21864	4.57363	1.02362	4.68167	40
21	0.21388	0.97686	0.21895	4.56726	1.02369	4.67545	39
22	0.21417	0.97680	0.21925	4.56091	1.02375	4.66925	38
23	0.21445	0.97673	0.21956	4.55458	1.02382	4.66307	37
24	0.21474	0.97667	0.21986	4.54826	1.02388	4.65690	36
25	0.21502	0.97661	0.22017	4.54196	1.02395	4.65074	35
26	0.21530	0.97655	0.22047	4.53568	1.02402	4.64461	34
27	0.21559	0.97648	0.22078	4.52941	1.02408	4.63849	33
28	0.21587	0.97642	0.22109	4.52316	1.02415	4.63238	32
29	0.21616	0.97636	0.22139	4.51693	1.02421	4.62630	31
30	0.21644	0.97630	0.22169	4.51071	1.02428	4.62023	30
31	0.21672	0.97623	0.22200	4.50451	1.02435	4.61417	29
32	0.21701	0.97617	0.22231	4.49832	1.02441	4.60813	28
33	0.21729	0.97611	0.22261	4.49215	1.02448	4.60211	27
34	0.21758	0.97604	0.22292	4.48600	1.02454	4.59611	26
35	0.21786	0.97598	0.22322	4.47986	1.02461	4.59012	25
36	0.21814	0.97592	0.22353	4.47374	1.02468	4.58414	24
37	0.21843	0.97585	0.22383	4.46764	1.02474	4.57819	23
38	0.21871	0.97579	0.22414	4.46155	1.02481	4.57224	22
39	0.21899	0.97573	0.22444	4.45548	1.02488	4.56632	21
40	0.21928	0.97566	0.22475	4.44942	1.02494	4.56041	20
41	0.21956	0.97560	0.22505	4.44338	1.02501	4.55451	19
42	0.21985	0.97553	0.22536	4.43735	1.02508	4.54863	18
43	0.22013	0.97547	0.22567	4.43134	1.02515	4.54277	17
44	0.22041	0.97541	0.22597	4.42534	1.02521	4.53692	16
45	0.22070	0.97534	0.22628	4.41936	1.02528	4.53109	15
46	0.22098	0.97528	0.22658	4.41340	1.02535	4.52527	14
47	0.22126	0.97521	0.22689	4.40745	1.02542	4.51947	13
48	0.22155	0.97515	0.22719	4.40152	1.02548	4.51368	12
49	0.22183	0.97508	0.22750	4.39560	1.02555	4.50791	11
50	0.22212	0.97502	0.22781	4.38969	1.02562	4.50216	10
51	0.22240	0.97496	0.22811	4.38381	1.02569	4.49642	9
52	0.22268	0.97489	0.22842	4.37793	1.02576	4.49069	8
53	0.22297	0.97483	0.22872	4.37207	1.02582	4.48498	7
54	0.22325	0.97476	0.22903	4.36623	1.02589	4.47928	6
55	0.22353	0.97470	0.22934	4.36040	1.02596	4.47360	5
56	0.22382	0.97463	0.22964	4.35459	1.02603	4.46793	4
57	0.22410	0.97457	0.22995	4.34879	1.02610	4.46228	3
58	0.22438	0.97450	0.23026	4.34300	1.02617	4.45664	2
59	0.22467	0.97444	0.23056	4.33723	1.02624	4.45102	1
60	0.22495	0.97437	0.23087	4.33148	1.02630	4.44541	0
	Cosin.	Sin.	Cotg.	Tang.	Cosec.	Sec.	

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	Sin.	Cosin.	Tang.	Cotg.	Sec.	Cosec.	
0	0.22495	0.97437	0.23087	4.33148	1.02630	4.44541	60
1	0.22523	0.97430	0.23117	4.32573	1.02637	4.43982	59
2	0.22552	0.97424	0.23148	4.32001	1.02644	4.43424	58
3	0.22580	0.97417	0.23179	4.31430	1.02651	4.42867	57
4	0.22608	0.97411	0.23209	4.30860	1.02658	4.42312	56
5	0.22637	0.97404	0.23240	4.30291	1.02665	4.41759	55
6	0.22665	0.97398	0.23271	4.29724	1.02672	4.41206	54
7	0.22693	0.97391	0.23301	4.29159	1.02679	4.40656	53
8	0.22722	0.97384	0.23332	4.28595	1.02686	4.40106	52
9	0.22750	0.97378	0.23363	4.28032	1.02693	4.39558	51
10	0.22778	0.97371	0.23393	4.27471	1.02700	4.39012	50
11	0.22807	0.97365	0.23424	4.26911	1.02707	4.38466	49
12	0.22835	0.97358	0.23455	4.26352	1.02714	4.37923	48
13	0.22863	0.97351	0.23485	4.25795	1.02721	4.37380	47
14	0.22892	0.97345	0.23516	4.25239	1.02728	4.36839	46
15	0.22920	0.97338	0.23547	4.24685	1.02735	4.36299	45
16	0.22948	0.97331	0.23578	4.24132	1.02742	4.35761	44
17	0.22977	0.97325	0.23608	4.23580	1.02749	4.35224	43
18	0.23005	0.97318	0.23639	4.23030	1.02756	4.34689	42
19	0.23033	0.97311	0.23670	4.22481	1.02763	4.34154	41
20	0.23062	0.97304	0.23700	4.21933	1.02770	4.33622	40
21	0.23090	0.97298	0.23731	4.21387	1.02777	4.33090	39
22	0.23118	0.97291	0.23762	4.20842	1.02784	4.32560	38
23	0.23146	0.97284	0.23793	4.20298	1.02791	4.32031	37
24	0.23175	0.97278	0.23823	4.19756	1.02799	4.31503	36
25	0.23203	0.97271	0.23854	4.19215	1.02806	4.30977	35
26	0.23231	0.97264	0.23885	4.18675	1.02813	4.30452	34
27	0.23260	0.97257	0.23916	4.18137	1.02820	4.29929	33
28	0.23288	0.97251	0.23946	4.17600	1.02827	4.29406	32
29	0.23316	0.97244	0.23977	4.17064	1.02834	4.28885	31
30	0.23345	0.97237	0.24008	4.16530	1.02842	4.28366	30
31	0.23373	0.97230	0.24039	4.15997	1.02849	4.27847	29
32	0.23401	0.97223	0.24069	4.15465	1.02856	4.27330	28
33	0.23429	0.97217	0.24100	4.14934	1.02863	4.26814	27
34	0.23458	0.97210	0.24131	4.14405	1.02870	4.26300	26
35	0.23486	0.97203	0.24162	4.13877	1.02878	4.25787	25
36	0.23514	0.97196	0.24193	4.13350	1.02885	4.25275	24
37	0.23542	0.97189	0.24223	4.12825	1.02892	4.24764	23
38	0.23571	0.97182	0.24254	4.12301	1.02899	4.24255	22
39	0.23599	0.97176	0.24285	4.11778	1.02907	4.23746	21
40	0.23627	0.97169	0.24316	4.11256	1.02914	4.23239	20
41	0.23656	0.97162	0.24347	4.10736	1.02921	4.22734	19
42	0.23684	0.97155	0.24377	4.10216	1.02928	4.22229	18
43	0.23712	0.97148	0.24408	4.09699	1.02936	4.21726	17
44	0.23740	0.97141	0.24439	4.09182	1.02943	4.21224	16
45	0.23769	0.97134	0.24470	4.08666	1.02950	4.20723	15
46	0.23797	0.97127	0.24501	4.08152	1.02958	4.20224	14
47	0.23825	0.97120	0.24532	4.07639	1.02965	4.19725	13
48	0.23853	0.97113	0.24562	4.07127	1.02972	4.19228	12
49	0.23882	0.97106	0.24593	4.06616	1.02980	4.18733	11
50	0.23910	0.97100	0.24624	4.06107	1.02987	4.18238	10
51	0.23938	0.97093	0.24655	4.05599	1.02994	4.17744	9
52	0.23966	0.97086	0.24686	4.05092	1.03002	4.17252	8
53	0.23995	0.97079	0.24717	4.04586	1.03009	4.16761	7
54	0.24023	0.97072	0.24747	4.04081	1.03017	4.16271	6
55	0.24051	0.97065	0.24778	4.03578	1.03024	4.15782	5
56	0.24079	0.97058	0.24809	4.03076	1.03032	4.15295	4
57	0.24108	0.97051	0.24840	4.02574	1.03039	4.14809	3
58	0.24136	0.97044	0.24871	4.02074	1.03046	4.14323	2
59	0.24164	0.97037	0.24902	4.01576	1.03054	4.13839	1
60	0.24192	0.97030	0.24933	4.01078	1.03061	4.13357	0
	Cosin.	Sin.	Cotg.	Tang.	Cosec.	Sec.	

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	Sin.	Cosin.	Tang.	Cotg.	Sec.	Cosec.	
0	0.24192	0.97030	0.24933	4.01078	1.03061	4.13357	60
1	0.24220	0.97023	0.24964	4.00582	1.03069	4.12875	59
2	0.24249	0.97015	0.24995	4.00086	1.03076	4.12394	58
3	0.24277	0.97008	0.25026	3.99592	1.03084	4.11915	57
4	0.24305	0.97001	0.25056	3.99099	1.03091	4.11437	56
5	0.24333	0.96994	0.25087	3.98607	1.03099	4.10960	55
6	0.24362	0.96987	0.25118	3.98117	1.03106	4.10484	54
7	0.24390	0.96980	0.25149	3.97627	1.03114	4.10009	53
8	0.24418	0.96973	0.25180	3.97139	1.03121	4.09535	52
9	0.24446	0.96966	0.25211	3.96651	1.03129	4.09063	51
10	0.24474	0.96959	0.25242	3.96165	1.03137	4.08591	50
11	0.24503	0.96952	0.25273	3.95680	1.03144	4.08121	49
12	0.24531	0.96945	0.25304	3.95196	1.03152	4.07652	48
13	0.24559	0.96937	0.25335	3.94713	1.03159	4.07184	47
14	0.24587	0.96930	0.25366	3.94232	1.03167	4.06717	46
15	0.24615	0.96923	0.25397	3.93751	1.03175	4.06251	45
16	0.24644	0.96916	0.25428	3.93271	1.03182	4.05786	44
17	0.24672	0.96909	0.25459	3.92793	1.03190	4.05322	43
18	0.24700	0.96902	0.25490	3.92316	1.03197	4.04860	42
19	0.24728	0.96894	0.25521	3.91839	1.03205	4.04398	41
20	0.24756	0.96887	0.25552	3.91364	1.03213	4.03938	40
21	0.24784	0.96880	0.25583	3.90890	1.03220	4.03479	39
22	0.24813	0.96873	0.25614	3.90417	1.03228	4.03020	38
23	0.24841	0.96866	0.25645	3.89945	1.03236	4.02563	37
24	0.24869	0.96858	0.25676	3.89474	1.03244	4.02107	36
25	0.24897	0.96851	0.25707	3.89004	1.03251	4.01652	35
26	0.24925	0.96844	0.25738	3.88536	1.03259	4.01198	34
27	0.24954	0.96837	0.25769	3.88068	1.03267	4.00745	33
28	0.24982	0.96829	0.25800	3.87601	1.03275	4.00293	32
29	0.25010	0.96822	0.25831	3.87136	1.03282	3.99843	31
30	0.25038	0.96815	0.25862	3.86671	1.03290	3.99393	30
31	0.25066	0.96807	0.25893	3.86208	1.03298	3.98944	29
32	0.25094	0.96800	0.25924	3.85745	1.03306	3.98497	28
33	0.25122	0.96793	0.25955	3.85284	1.03313	3.98050	27
34	0.25151	0.96786	0.25986	3.84824	1.03321	3.97604	26
35	0.25179	0.96778	0.26017	3.84364	1.03329	3.97160	25
36	0.25207	0.96771	0.26048	3.83906	1.03337	3.96716	24
37	0.25235	0.96764	0.26079	3.83449	1.03345	3.96274	23
38	0.25263	0.96756	0.26110	3.82992	1.03353	3.95832	22
39	0.25291	0.96749	0.26141	3.82537	1.03360	3.95392	21
40	0.25320	0.96742	0.26172	3.82083	1.03368	3.94954	20
41	0.25348	0.96734	0.26203	3.81630	1.03376	3.94512	19
42	0.25376	0.96727	0.26235	3.81173	1.03384	3.94076	18
43	0.25404	0.96719	0.26266	3.80726	1.03392	3.93640	17
44	0.25432	0.96712	0.26297	3.80276	1.03400	3.93204	16
45	0.25460	0.96705	0.26328	3.79827	1.03408	3.92770	15
46	0.25488	0.96697	0.26359	3.79378	1.03416	3.92337	14
47	0.25516	0.96690	0.26390	3.78931	1.03424	3.91904	13
48	0.25545	0.96682	0.26421	3.78485	1.03432	3.91473	12
49	0.25573	0.96675	0.26452	3.78040	1.03439	3.91042	11
50	0.25601	0.96667	0.26483	3.77595	1.03447	3.90613	10
51	0.25629	0.96660	0.26515	3.77152	1.03455	3.90184	9
52	0.25657	0.96653	0.26546	3.76709	1.03463	3.89756	8
53	0.25685	0.96645	0.26577	3.76268	1.03471	3.89330	7
54	0.25713	0.96638	0.26608	3.75828	1.03479	3.88904	6
55	0.25741	0.96630	0.26639	3.75388	1.03487	3.88479	5
56	0.25769	0.96623	0.26670	3.74950	1.03495	3.88056	4
57	0.25798	0.96615	0.26701	3.74512	1.03503	3.87633	3
58	0.25826	0.96608	0.26733	3.74075	1.03511	3.87211	2
59	0.25854	0.96600	0.26764	3.73640	1.03520	3.86790	1
60	0.25882	0.96593	0.26795	3.73205	1.03528	3.86370	0
	Cosin.	Sin.	Cotg.	Tang.	Cosec.	Sec.	

15°

	Sin.	Cosin.	Tang.	Cotg.	Sec.	Cosec.	
0	0.25882	0.96593	0.26795	3.73205	1.03328	3.86370	60
1	0.25910	0.96585	0.26826	3.72771	1.03336	3.85951	59
2	0.25938	0.96578	0.26857	3.72338	1.03344	3.85533	58
3	0.25966	0.96570	0.26888	3.71907	1.03352	3.85116	57
4	0.25994	0.96562	0.26920	3.71476	1.03360	3.84700	56
5	0.26022	0.96555	0.26951	3.71046	1.03368	3.84285	55
6	0.26050	0.96547	0.26982	3.70616	1.03376	3.83871	54
7	0.26079	0.96540	0.27013	3.70188	1.03384	3.83457	53
8	0.26107	0.96532	0.27044	3.69761	1.03392	3.83045	52
9	0.26135	0.96524	0.27076	3.69335	1.03601	3.82633	51
10	0.26163	0.96517	0.27107	3.68909	1.03609	3.82223	50
11	0.26191	0.96509	0.27138	3.68485	1.03617	3.81813	49
12	0.26219	0.96502	0.27169	3.68061	1.03625	3.81404	48
13	0.26247	0.96494	0.27201	3.67638	1.03633	3.80996	47
14	0.26275	0.96486	0.27232	3.67217	1.03642	3.80589	46
15	0.26303	0.96479	0.27263	3.66796	1.03650	3.80183	45
16	0.26331	0.96471	0.27294	3.66376	1.03658	3.79778	44
17	0.26359	0.96463	0.27326	3.65957	1.03666	3.79374	43
18	0.26387	0.96456	0.27357	3.65538	1.03674	3.78970	42
19	0.26415	0.96448	0.27388	3.65121	1.03683	3.78568	41
20	0.26443	0.96440	0.27419	3.64705	1.03691	3.78166	40
21	0.26471	0.96433	0.27451	3.64289	1.03699	3.77765	39
22	0.26500	0.96425	0.27482	3.63874	1.03708	3.77365	38
23	0.26528	0.96417	0.27513	3.63461	1.03716	3.76966	37
24	0.26556	0.96410	0.27545	3.63048	1.03724	3.76568	36
25	0.26584	0.96402	0.27576	3.62636	1.03732	3.76171	35
26	0.26612	0.96394	0.27607	3.62224	1.03741	3.75775	34
27	0.26640	0.96386	0.27638	3.61814	1.03749	3.75379	33
28	0.26668	0.96379	0.27670	3.61405	1.03757	3.74984	32
29	0.26696	0.96371	0.27701	3.60996	1.03766	3.74591	31
30	0.26724	0.96363	0.27732	3.60588	1.03774	3.74198	30
31	0.26752	0.96355	0.27764	3.60181	1.03783	3.73806	29
32	0.26780	0.96347	0.27795	3.59775	1.03791	3.73414	28
33	0.26808	0.96340	0.27826	3.59370	1.03799	3.73024	27
34	0.26836	0.96332	0.27858	3.58966	1.03808	3.72635	26
35	0.26864	0.96324	0.27889	3.58562	1.03816	3.72246	25
36	0.26892	0.96316	0.27921	3.58160	1.03825	3.71858	24
37	0.26920	0.96308	0.27952	3.57758	1.03833	3.71471	23
38	0.26948	0.96301	0.27983	3.57357	1.03842	3.71085	22
39	0.26976	0.96293	0.28015	3.56957	1.03850	3.70700	21
40	0.27004	0.96285	0.28046	3.56557	1.03858	3.70315	20
41	0.27032	0.96277	0.28077	3.56159	1.03867	3.69931	19
42	0.27060	0.96269	0.28109	3.55761	1.03875	3.69549	18
43	0.27088	0.96261	0.28140	3.55364	1.03884	3.69167	17
44	0.27116	0.96253	0.28172	3.54968	1.03892	3.68785	16
45	0.27144	0.96246	0.28203	3.54573	1.03901	3.68405	15
46	0.27172	0.96238	0.28234	3.54179	1.03909	3.68025	14
47	0.27200	0.96230	0.28266	3.53785	1.03918	3.67647	13
48	0.27228	0.96222	0.28297	3.53393	1.03927	3.67269	12
49	0.27256	0.96214	0.28329	3.53001	1.03935	3.66892	11
50	0.27284	0.96206	0.28360	3.52609	1.03944	3.66515	10
51	0.27312	0.96198	0.28391	3.52219	1.03952	3.66140	9
52	0.27340	0.96190	0.28423	3.51829	1.03961	3.65765	8
53	0.27368	0.96182	0.28454	3.51441	1.03969	3.65391	7
54	0.27396	0.96174	0.28488	3.51053	1.03978	3.65018	6
55	0.27424	0.96166	0.28517	3.50666	1.03987	3.64645	5
56	0.27452	0.96158	0.28549	3.50279	1.03995	3.64274	4
57	0.27480	0.96150	0.28580	3.49894	1.04004	3.63903	3
58	0.27508	0.96142	0.28612	3.49509	1.04013	3.63533	2
59	0.27536	0.96134	0.28643	3.49125	1.04021	3.63164	1
60	0.27564	0.96126	0.28675	3.48741	1.04030	3.62796	0
	Cosin.	Sin.	Cotg.	Tang.	Cosec.	Sec.	

	Sin.	Cosin.	Tang.	Cotg.	Sec.	Cosec.	
0	0.27564	0.96126	0.28675	3.48741	1.04030	3.62796	60
1	0.27592	0.96118	0.28706	3.48359	1.04039	3.62428	59
2	0.27620	0.96110	0.28738	3.47977	1.04047	3.62061	58
3	0.27648	0.96102	0.28769	3.47596	1.04056	3.61695	57
4	0.27676	0.96094	0.28801	3.47216	1.04065	3.61330	56
5	0.27704	0.96086	0.28832	3.46837	1.04073	3.60965	55
6	0.27731	0.96078	0.28864	3.46458	1.04082	3.60601	54
7	0.27759	0.96070	0.28895	3.46080	1.04091	3.60238	53
8	0.27787	0.96062	0.28927	3.45703	1.04100	3.59876	52
9	0.27815	0.96054	0.28958	3.45327	1.04108	3.59514	51
10	0.27843	0.96046	0.28990	3.44951	1.04117	3.59154	50
11	0.27871	0.96037	0.29021	3.44576	1.04126	3.58794	49
12	0.27899	0.96029	0.29053	3.44202	1.04135	3.58434	48
13	0.27927	0.96021	0.29084	3.43829	1.04144	3.58076	47
14	0.27955	0.96013	0.29116	3.43456	1.04152	3.57718	46
15	0.27983	0.96005	0.29147	3.43084	1.04161	3.57361	45
16	0.28011	0.95997	0.29179	3.42713	1.04170	3.57005	44
17	0.28039	0.95989	0.29210	3.42343	1.04179	3.56649	43
18	0.28067	0.95981	0.29242	3.41973	1.04188	3.56294	42
19	0.28095	0.95972	0.29274	3.41604	1.04197	3.55940	41
20	0.28123	0.95964	0.29305	3.41236	1.04206	3.55587	40
21	0.28150	0.95956	0.29337	3.40869	1.04214	3.55234	39
22	0.28178	0.95948	0.29368	3.40502	1.04223	3.54883	38
23	0.28206	0.95940	0.29400	3.40136	1.04232	3.54531	37
24	0.28234	0.95931	0.29432	3.39771	1.04241	3.54181	36
25	0.28262	0.95923	0.29463	3.39406	1.04250	3.53831	35
26	0.28290	0.95915	0.29495	3.39042	1.04259	3.53482	34
27	0.28318	0.95907	0.29526	3.38679	1.04268	3.53134	33
28	0.28346	0.95898	0.29558	3.38317	1.04277	3.52787	32
29	0.28374	0.95890	0.29590	3.37955	1.04286	3.52440	31
30	0.28402	0.95882	0.29621	3.37594	1.04295	3.52094	30
31	0.28429	0.95874	0.29653	3.37234	1.04304	3.51748	29
32	0.28457	0.95865	0.29685	3.36875	1.04313	3.51404	28
33	0.28485	0.95857	0.29716	3.36516	1.04322	3.51060	27
34	0.28513	0.95849	0.29748	3.36158	1.04331	3.50716	26
35	0.28541	0.95841	0.29780	3.35800	1.04340	3.50374	25
36	0.28569	0.95832	0.29811	3.35443	1.04349	3.50032	24
37	0.28597	0.95824	0.29843	3.35087	1.04358	3.49691	23
38	0.28625	0.95816	0.29875	3.34732	1.04367	3.49350	22
39	0.28652	0.95807	0.29906	3.34377	1.04376	3.49010	21
40	0.28680	0.95799	0.29938	3.34023	1.04385	3.48671	20
41	0.28708	0.95791	0.29970	3.33670	1.04394	3.48333	19
42	0.28736	0.95782	0.30001	3.33317	1.04403	3.47995	18
43	0.28764	0.95774	0.30033	3.32965	1.04413	3.47658	17
44	0.28792	0.95766	0.30065	3.32614	1.04422	3.47321	16
45	0.28820	0.95757	0.30097	3.32264	1.04431	3.46986	15
46	0.28847	0.95749	0.30128	3.31914	1.04440	3.46651	14
47	0.28875	0.95740	0.30160	3.31565	1.04449	3.46316	13
48	0.28903	0.95732	0.30192	3.31216	1.04458	3.45983	12
49	0.28931	0.95724	0.30224	3.30868	1.04468	3.45650	11
50	0.28959	0.95715	0.30255	3.30521	1.04477	3.45317	10
51	0.28987	0.95707	0.30287	3.30174	1.04486	3.44986	9
52	0.29015	0.95698	0.30319	3.29829	1.04495	3.44655	8
53	0.29043	0.95690	0.30351	3.29483	1.04504	3.44324	7
54	0.29070	0.95681	0.30382	3.29139	1.04514	3.43995	6
55	0.29098	0.95673	0.30414	3.28795	1.04523	3.43666	5
56	0.29126	0.95664	0.30446	3.28452	1.04532	3.43337	4
57	0.29154	0.95656	0.30478	3.28109	1.04541	3.43010	3
58	0.29182	0.95647	0.30509	3.27767	1.04551	3.42683	2
59	0.29209	0.95639	0.30541	3.27426	1.04560	3.42356	1
60	0.29237	0.95630	0.30573	3.27085	1.04569	3.42030	0
	Cosin.	Sin.	Cotg.	Tang.	Cosec.	Sec.	

	Sin.	Cosin.	Tang.	Cotg.	Sec.	Cosec.	
0	0.29237	0.95630	0.30573	3.27085	1.04569	3.42030	60
1	0.29265	0.95622	0.30605	3.26745	1.04578	3.41705	59
2	0.29293	0.95613	0.30637	3.26406	1.04588	3.41381	58
3	0.29321	0.95605	0.30669	3.26067	1.04597	3.41057	57
4	0.29348	0.95596	0.30700	3.25729	1.04606	3.40734	56
5	0.29376	0.95588	0.30732	3.25392	1.04616	3.40411	55
6	0.29404	0.95579	0.30764	3.25055	1.04625	3.40089	54
7	0.29432	0.95571	0.30796	3.24719	1.04635	3.39768	53
8	0.29460	0.95562	0.30828	3.24383	1.04644	3.39448	52
9	0.29487	0.95554	0.30860	3.24049	1.04653	3.39128	51
10	0.29515	0.95545	0.30891	3.23714	1.04663	3.38808	50
11	0.29543	0.95536	0.30923	3.23381	1.04672	3.38489	49
12	0.29571	0.95528	0.30955	3.23048	1.04682	3.38171	48
13	0.29599	0.95519	0.30987	3.22715	1.04691	3.37854	47
14	0.29626	0.95511	0.31019	3.22384	1.04700	3.37537	46
15	0.29654	0.95502	0.31051	3.22053	1.04710	3.37221	45
16	0.29682	0.95493	0.31083	3.21722	1.04719	3.36905	44
17	0.29710	0.95485	0.31115	3.21392	1.04729	3.36590	43
18	0.29737	0.95476	0.31147	3.21063	1.04738	3.36276	42
19	0.29765	0.95467	0.31178	3.20734	1.04748	3.35962	41
20	0.29793	0.95459	0.31210	3.20406	1.04757	3.35649	40
21	0.29821	0.95450	0.31242	3.20079	1.04767	3.35336	39
22	0.29849	0.95441	0.31274	3.19752	1.04776	3.35025	38
23	0.29876	0.95433	0.31306	3.19426	1.04786	3.34713	37
24	0.29904	0.95424	0.31338	3.19100	1.04795	3.34403	36
25	0.29932	0.95415	0.31370	3.18775	1.04805	3.34092	35
26	0.29960	0.95407	0.31402	3.18451	1.04815	3.33783	34
27	0.29987	0.95398	0.31434	3.18127	1.04824	3.33474	33
28	0.30015	0.95389	0.31466	3.17804	1.04834	3.33166	32
29	0.30043	0.95380	0.31498	3.17481	1.04843	3.32858	31
30	0.30071	0.95372	0.31530	3.17159	1.04853	3.32551	30
31	0.30098	0.95363	0.31562	3.16838	1.04863	3.32244	29
32	0.30126	0.95354	0.31594	3.16517	1.04872	3.31939	28
33	0.30154	0.95345	0.31626	3.16197	1.04882	3.31633	27
34	0.30182	0.95337	0.31658	3.15877	1.04891	3.31328	26
35	0.30209	0.95328	0.31690	3.15558	1.04901	3.31024	25
36	0.30237	0.95319	0.31722	3.15240	1.04911	3.30721	24
37	0.30265	0.95310	0.31754	3.14922	1.04920	3.30418	23
38	0.30292	0.95301	0.31786	3.14605	1.04930	3.30115	22
39	0.30320	0.95293	0.31818	3.14288	1.04940	3.29814	21
40	0.30348	0.95284	0.31850	3.13972	1.04950	3.29512	20
41	0.30376	0.95275	0.31882	3.13656	1.04959	3.29212	19
42	0.30403	0.95266	0.31914	3.13341	1.04969	3.28912	18
43	0.30431	0.95257	0.31946	3.13027	1.04979	3.28612	17
44	0.30459	0.95248	0.31978	3.12713	1.04989	3.28313	16
45	0.30486	0.95240	0.32010	3.12400	1.04998	3.28015	15
46	0.30514	0.95231	0.32042	3.12087	1.05008	3.27717	14
47	0.30542	0.95222	0.32074	3.11775	1.05018	3.27420	13
48	0.30570	0.95213	0.32106	3.11464	1.05028	3.27123	12
49	0.30597	0.95204	0.32139	3.11153	1.05038	3.26827	11
50	0.30625	0.95195	0.32171	3.10842	1.05047	3.26531	10
51	0.30653	0.95186	0.32203	3.10532	1.05057	3.26237	9
52	0.30680	0.95177	0.32235	3.10223	1.05067	3.25942	8
53	0.30708	0.95168	0.32267	3.09914	1.05077	3.25648	7
54	0.30736	0.95159	0.32299	3.09606	1.05087	3.25355	6
55	0.30763	0.95150	0.32331	3.09298	1.05097	3.25062	5
56	0.30791	0.95142	0.32363	3.08991	1.05107	3.24770	4
57	0.30819	0.95133	0.32396	3.08685	1.05116	3.24478	3
58	0.30846	0.95124	0.32428	3.08379	1.05126	3.24187	2
59	0.30874	0.95115	0.32460	3.08073	1.05136	3.23897	1
60	0.30902	0.95106	0.32492	3.07768	1.05146	3.23607	0
	Cosin.	Sin.	Cotg.	Tang.	Cosec.	Sec.	

	Sin.	Cosin.	Tang.	Cotg.	Sec.	Cosec.	
0	0.30902	0.95106	0.32492	3.07768	1.05146	3.23607	60
1	0.30929	0.95097	0.32524	3.07464	1.05156	3.23317	59
2	0.30957	0.95088	0.32556	3.07160	1.05166	3.23028	58
3	0.30985	0.95079	0.32588	3.06857	1.05176	3.22740	57
4	0.31012	0.95070	0.32621	3.06554	1.05186	3.22452	56
5	0.31040	0.95061	0.32653	3.06252	1.05196	3.22165	55
6	0.31068	0.95052	0.32685	3.05950	1.05206	3.21878	54
7	0.31095	0.95043	0.32717	3.05649	1.05216	3.21592	53
8	0.31123	0.95033	0.32749	3.05349	1.05226	3.21306	52
9	0.31151	0.95024	0.32782	3.05049	1.05236	3.21021	51
10	0.31178	0.95015	0.32814	3.04749	1.05246	3.20737	50
11	0.31206	0.95006	0.32846	3.04450	1.05256	3.20453	49
12	0.31233	0.94997	0.32878	3.04152	1.05266	3.20169	48
13	0.31261	0.94988	0.32911	3.03854	1.05276	3.19886	47
14	0.31289	0.94979	0.32943	3.03556	1.05286	3.19604	46
15	0.31316	0.94970	0.32975	3.03260	1.05297	3.19322	45
16	0.31344	0.94961	0.33007	3.02963	1.05307	3.19040	44
17	0.31372	0.94952	0.33040	3.02667	1.05317	3.18759	43
18	0.31399	0.94943	0.33072	3.02372	1.05327	3.18479	42
19	0.31427	0.94933	0.33104	3.02077	1.05337	3.18199	41
20	0.31454	0.94924	0.33136	3.01783	1.05347	3.17920	40
21	0.31482	0.94915	0.33169	3.01489	1.05357	3.17641	39
22	0.31510	0.94906	0.33201	3.01196	1.05367	3.17363	38
23	0.31537	0.94897	0.33233	3.00903	1.05378	3.17085	37
24	0.31565	0.94888	0.33266	3.00611	1.05388	3.16808	36
25	0.31593	0.94878	0.33298	3.00319	1.05398	3.16531	35
26	0.31620	0.94869	0.33330	3.00028	1.05408	3.16255	34
27	0.31648	0.94860	0.33363	2.99738	1.05418	3.15979	33
28	0.31675	0.94851	0.33395	2.99447	1.05429	3.15704	32
29	0.31703	0.94842	0.33427	2.99158	1.05439	3.15429	31
30	0.31730	0.94832	0.33460	2.98868	1.05449	3.15155	30
31	0.31758	0.94823	0.33492	2.98580	1.05459	3.14881	29
32	0.31786	0.94814	0.33524	2.98292	1.05470	3.14608	28
33	0.31813	0.94805	0.33557	2.98004	1.05480	3.14335	27
34	0.31841	0.94795	0.33589	2.97717	1.05490	3.14063	26
35	0.31868	0.94786	0.33621	2.97430	1.05501	3.13791	25
36	0.31896	0.94777	0.33654	2.97144	1.05511	3.13520	24
37	0.31923	0.94768	0.33686	2.96858	1.05521	3.13249	23
38	0.31951	0.94758	0.33718	2.96573	1.05532	3.12979	22
39	0.31979	0.94749	0.33751	2.96288	1.05542	3.12709	21
40	0.32006	0.94740	0.33783	2.96004	1.05552	3.12440	20
41	0.32034	0.94730	0.33816	2.95721	1.05563	3.12171	19
42	0.32061	0.94721	0.33848	2.95437	1.05573	3.11903	18
43	0.32089	0.94712	0.33881	2.95155	1.05584	3.11635	17
44	0.32116	0.94702	0.33913	2.94872	1.05594	3.11367	16
45	0.32144	0.94693	0.33945	2.94591	1.05604	3.11101	15
46	0.32171	0.94684	0.33978	2.94309	1.05615	3.10834	14
47	0.32199	0.94674	0.34010	2.94028	1.05625	3.10568	13
48	0.32227	0.94665	0.34043	2.93748	1.05636	3.10303	12
49	0.32254	0.94656	0.34075	2.93468	1.05646	3.10038	11
50	0.32282	0.94646	0.34108	2.93189	1.05657	3.09774	10
51	0.32309	0.94637	0.34140	2.92910	1.05667	3.09510	9
52	0.32337	0.94627	0.34173	2.92632	1.05678	3.09246	8
53	0.32364	0.94618	0.34205	2.92354	1.05688	3.08983	7
54	0.32392	0.94609	0.34238	2.92076	1.05699	3.08721	6
55	0.32419	0.94599	0.34270	2.91799	1.05709	3.08459	5
56	0.32447	0.94590	0.34303	2.91523	1.05720	3.08197	4
57	0.32474	0.94580	0.34335	2.91246	1.05730	3.07936	3
58	0.32502	0.94571	0.34368	2.90971	1.05741	3.07675	2
59	0.32529	0.94561	0.34400	2.90696	1.05751	3.07415	1
60	0.32557	0.94552	0.34433	2.90421	1.05762	3.07155	0
	Cosin.	Sin.	Cotg.	Tang.	Cosec.	Sec.	

19°

	Sin.	Cosin.	Tang.	Cotg.	Sec.	Cosec.	
0	0.32557	0.94552	0.34433	2.90421	1.05762	3.07155	60
1	0.32584	0.94542	0.34465	2.90147	1.05773	3.06896	59
2	0.32612	0.94533	0.34498	2.89873	1.05783	3.06637	58
3	0.32639	0.94523	0.34530	2.89600	1.05794	3.06379	57
4	0.32667	0.94514	0.34563	2.89327	1.05805	3.06121	56
5	0.32694	0.94504	0.34596	2.89055	1.05815	3.05864	55
6	0.32722	0.94495	0.34628	2.88783	1.05826	3.05607	54
7	0.32749	0.94485	0.34661	2.88511	1.05836	3.05350	53
8	0.32777	0.94476	0.34693	2.88240	1.05847	3.05094	52
9	0.32804	0.94466	0.34726	2.87970	1.05858	3.04839	51
10	0.32832	0.94457	0.34758	2.87700	1.05869	3.04584	50
11	0.32859	0.94447	0.34791	2.87430	1.05879	3.04329	49
12	0.32887	0.94438	0.34824	2.87161	1.05890	3.04075	48
13	0.32914	0.94428	0.34856	2.86892	1.05901	3.03821	47
14	0.32942	0.94418	0.34889	2.86624	1.05911	3.03568	46
15	0.32969	0.94409	0.34922	2.86356	1.05922	3.03315	45
16	0.32997	0.94399	0.34954	2.86089	1.05933	3.03062	44
17	0.33024	0.94390	0.34987	2.85822	1.05944	3.02810	43
18	0.33051	0.94380	0.35020	2.85555	1.05955	3.02559	42
19	0.33079	0.94370	0.35052	2.85289	1.05965	3.02308	41
20	0.33106	0.94361	0.35085	2.85023	1.05976	3.02057	40
21	0.33134	0.94351	0.35118	2.84758	1.05987	3.01807	39
22	0.33161	0.94342	0.35150	2.84494	1.05998	3.01557	38
23	0.33189	0.94332	0.35183	2.84229	1.06009	3.01308	37
24	0.33216	0.94322	0.35216	2.83965	1.06020	3.01059	36
25	0.33244	0.94313	0.35248	2.83702	1.06030	3.00810	35
26	0.33271	0.94303	0.35281	2.83439	1.06041	3.00562	34
27	0.33298	0.94293	0.35314	2.83176	1.06052	3.00315	33
28	0.33326	0.94284	0.35346	2.82914	1.06063	3.00067	32
29	0.33353	0.94274	0.35379	2.82653	1.06074	2.99821	31
30	0.33381	0.94264	0.35412	2.82391	1.06085	2.99574	30
31	0.33408	0.94254	0.35445	2.82130	1.06096	2.99329	29
32	0.33436	0.94245	0.35477	2.81870	1.06107	2.99083	28
33	0.33463	0.94235	0.35510	2.81610	1.06118	2.98838	27
34	0.33490	0.94225	0.35543	2.81350	1.06129	2.98594	26
35	0.33518	0.94215	0.35576	2.81091	1.06140	2.98349	25
36	0.33545	0.94206	0.35608	2.80833	1.06151	2.98106	24
37	0.33573	0.94196	0.35641	2.80574	1.06162	2.97862	23
38	0.33600	0.94186	0.35674	2.80316	1.06173	2.97619	22
39	0.33627	0.94176	0.35707	2.80059	1.06184	2.97377	21
40	0.33655	0.94167	0.35740	2.79802	1.06195	2.97135	20
41	0.33682	0.94157	0.35772	2.79545	1.06206	2.96893	19
42	0.33710	0.94147	0.35805	2.79289	1.06217	2.96652	18
43	0.33737	0.94137	0.35838	2.79033	1.06228	2.96411	17
44	0.33764	0.94127	0.35871	2.78778	1.06239	2.96171	16
45	0.33792	0.94118	0.35904	2.78523	1.06250	2.95931	15
46	0.33819	0.94108	0.35937	2.78269	1.06261	2.95691	14
47	0.33846	0.94098	0.35969	2.78014	1.06272	2.95452	13
48	0.33874	0.94088	0.36002	2.77761	1.06283	2.95213	12
49	0.33901	0.94078	0.36035	2.77507	1.06295	2.94975	11
50	0.33929	0.94068	0.36068	2.77254	1.06306	2.94737	10
51	0.33956	0.94058	0.36101	2.77002	1.06317	2.94500	9
52	0.33983	0.94049	0.36134	2.76750	1.06328	2.94263	8
53	0.34011	0.94039	0.36167	2.76498	1.06339	2.94026	7
54	0.34038	0.94029	0.36199	2.76247	1.06350	2.93790	6
55	0.34065	0.94019	0.36232	2.75996	1.06362	2.93554	5
56	0.34093	0.94009	0.36265	2.75746	1.06373	2.93318	4
57	0.34120	0.93999	0.36298	2.75496	1.06384	2.93083	3
58	0.34147	0.93989	0.36331	2.75246	1.06395	2.92849	2
59	0.34175	0.93979	0.36364	2.74997	1.06407	2.92614	1
60	0.34202	0.93969	0.36397	2.74748	1.06418	2.92380	0
	Cosin.	Sin.	Cotg.	Tang.	Cosec.	Sec.	

	Sin.	Cosin.	Tang.	Cotg.	Sec.	Cosec.	
0	0.34202	0.93969	0.36397	2.74748	1.06418	2.92380	60
1	0.34229	0.93959	0.36430	2.74499	1.06429	2.92147	59
2	0.34257	0.93949	0.36463	2.74251	1.06440	2.91914	58
3	0.34284	0.93939	0.36496	2.74004	1.06452	2.91681	57
4	0.34311	0.93929	0.36529	2.73756	1.06463	2.91449	56
5	0.34339	0.93919	0.36562	2.73509	1.06474	2.91217	55
6	0.34366	0.93909	0.36595	2.73263	1.06486	2.90986	54
7	0.34393	0.93899	0.36628	2.73017	1.06497	2.90754	53
8	0.34421	0.93889	0.36661	2.72771	1.06508	2.90523	52
9	0.34448	0.93879	0.36694	2.72526	1.06520	2.90293	51
10	0.34475	0.93869	0.36727	2.72281	1.06531	2.90063	50
11	0.34503	0.93859	0.36760	2.72036	1.06542	2.89834	49
12	0.34530	0.93849	0.36793	2.71792	1.06554	2.89605	48
13	0.34557	0.93839	0.36826	2.71548	1.06565	2.89376	47
14	0.34584	0.93829	0.36859	2.71305	1.06577	2.89148	46
15	0.34612	0.93819	0.36892	2.71062	1.06588	2.88920	45
16	0.34639	0.93809	0.36925	2.70819	1.06600	2.88692	44
17	0.34666	0.93799	0.36958	2.70577	1.06611	2.88465	43
18	0.34694	0.93789	0.36991	2.70335	1.06622	2.88238	42
19	0.34721	0.93779	0.37024	2.70094	1.06634	2.88011	41
20	0.34748	0.93769	0.37057	2.69853	1.06645	2.87785	40
21	0.34775	0.93759	0.37090	2.69612	1.06657	2.87560	39
22	0.34803	0.93748	0.37123	2.69371	1.06668	2.87334	38
23	0.34830	0.93738	0.37157	2.69131	1.06680	2.87109	37
24	0.34857	0.93728	0.37190	2.68892	1.06691	2.86885	36
25	0.34884	0.93718	0.37223	2.68653	1.06703	2.86661	35
26	0.34912	0.93708	0.37256	2.68414	1.06715	2.86437	34
27	0.34939	0.93698	0.37289	2.68175	1.06726	2.86213	33
28	0.34966	0.93688	0.37322	2.67937	1.06738	2.85990	32
29	0.34993	0.93677	0.37355	2.67700	1.06749	2.85767	31
30	0.35021	0.93667	0.37388	2.67462	1.06761	2.85545	30
31	0.35048	0.93657	0.37422	2.67225	1.06773	2.85323	29
32	0.35075	0.93647	0.37455	2.66989	1.06784	2.85102	28
33	0.35102	0.93637	0.37488	2.66752	1.06796	2.84880	27
34	0.35130	0.93626	0.37521	2.66516	1.06807	2.84659	26
35	0.35157	0.93616	0.37554	2.66281	1.06819	2.84439	25
36	0.35184	0.93606	0.37588	2.66046	1.06831	2.84219	24
37	0.35211	0.93596	0.37621	2.65811	1.06842	2.83999	23
38	0.35239	0.93585	0.37654	2.65576	1.06854	2.83780	22
39	0.35266	0.93575	0.37687	2.65342	1.06866	2.83561	21
40	0.35293	0.93565	0.37720	2.65109	1.06878	2.83342	20
41	0.35320	0.93555	0.37754	2.64875	1.06889	2.83124	19
42	0.35347	0.93544	0.37787	2.64642	1.06901	2.82906	18
43	0.35375	0.93534	0.37820	2.64410	1.06913	2.82688	17
44	0.35402	0.93524	0.37853	2.64177	1.06925	2.82471	16
45	0.35429	0.93514	0.37887	2.63945	1.06936	2.82254	15
46	0.35456	0.93503	0.37920	2.63714	1.06948	2.82037	14
47	0.35484	0.93493	0.37953	2.63483	1.06960	2.81821	13
48	0.35511	0.93483	0.37986	2.63252	1.06972	2.81605	12
49	0.35538	0.93472	0.38020	2.63021	1.06984	2.81390	11
50	0.35565	0.93462	0.38053	2.62791	1.06995	2.81175	10
51	0.35592	0.93452	0.38086	2.62561	1.07007	2.80960	9
52	0.35619	0.93441	0.38120	2.62332	1.07019	2.80746	8
53	0.35647	0.93431	0.38153	2.62103	1.07031	2.80531	7
54	0.35674	0.93420	0.38186	2.61874	1.07043	2.80318	6
55	0.35701	0.93410	0.38220	2.61646	1.07055	2.80104	5
56	0.35728	0.93400	0.38253	2.61418	1.07067	2.79891	4
57	0.35755	0.93389	0.38286	2.61190	1.07079	2.79679	3
58	0.35782	0.93379	0.38320	2.60963	1.07091	2.79466	2
59	0.35810	0.93368	0.38353	2.60736	1.07103	2.79254	1
60	0.35837	0.93358	0.38386	2.60509	1.07114	2.79043	0
	Cosin.	Sin.	Cotg.	Tang.	Cosec.	Sec.	

	Sin.	Cosin.	Tang.	Cotg.	Sec.	Cosec.	
0	0.35837	0.93358	0.38386	2.60509	1.07114	2.79043	60
1	0.35864	0.93348	0.38420	2.60283	1.07126	2.78832	59
2	0.35891	0.93337	0.38453	2.60057	1.07138	2.78621	58
3	0.35918	0.93327	0.38487	2.59831	1.07150	2.78410	57
4	0.35945	0.93316	0.38520	2.59606	1.07162	2.78200	56
5	0.35973	0.93306	0.38553	2.59381	1.07174	2.77990	55
6	0.36000	0.93295	0.38587	2.59156	1.07186	2.77780	54
7	0.36027	0.93285	0.38620	2.58932	1.07199	2.77571	53
8	0.36054	0.93274	0.38654	2.58708	1.07211	2.77362	52
9	0.36081	0.93264	0.38687	2.58484	1.07223	2.77154	51
10	0.36108	0.93253	0.38721	2.58261	1.07235	2.76945	50
11	0.36135	0.93243	0.38754	2.58038	1.07247	2.76737	49
12	0.36162	0.93232	0.38787	2.57815	1.07259	2.76530	48
13	0.36190	0.93222	0.38821	2.57593	1.07271	2.76323	47
14	0.36217	0.93211	0.38854	2.57371	1.07283	2.76116	46
15	0.36244	0.93201	0.38888	2.57150	1.07295	2.75909	45
16	0.36271	0.93190	0.38921	2.56928	1.07307	2.75703	44
17	0.36298	0.93180	0.38955	2.56707	1.07320	2.75497	43
18	0.36325	0.93169	0.38988	2.56487	1.07332	2.75292	42
19	0.36352	0.93159	0.39022	2.56266	1.07344	2.75086	41
20	0.36379	0.93148	0.39055	2.56046	1.07356	2.74881	40
21	0.36406	0.93137	0.39089	2.55827	1.07368	2.74677	39
22	0.36434	0.93127	0.39122	2.55608	1.07380	2.74473	38
23	0.36461	0.93116	0.39156	2.55389	1.07393	2.74269	37
24	0.36488	0.93106	0.39190	2.55170	1.07405	2.74065	36
25	0.36515	0.93095	0.39223	2.54952	1.07417	2.73862	35
26	0.36542	0.93084	0.39257	2.54734	1.07429	2.73659	34
27	0.36569	0.93074	0.39290	2.54516	1.07442	2.73456	33
28	0.36596	0.93063	0.39324	2.54299	1.07454	2.73254	32
29	0.36623	0.93052	0.39357	2.54082	1.07466	2.73052	31
30	0.36650	0.93042	0.39391	2.53865	1.07479	2.72850	30
31	0.36677	0.93031	0.39425	2.53648	1.07491	2.72649	29
32	0.36704	0.93020	0.39458	2.53432	1.07503	2.72448	28
33	0.36731	0.93010	0.39492	2.53217	1.07516	2.72247	27
34	0.36758	0.92999	0.39526	2.53001	1.07528	2.72047	26
35	0.36785	0.92988	0.39559	2.52786	1.07540	2.71847	25
36	0.36812	0.92978	0.39593	2.52571	1.07553	2.71647	24
37	0.36839	0.92967	0.39626	2.52357	1.07565	2.71448	23
38	0.36867	0.92956	0.39660	2.52142	1.07578	2.71249	22
39	0.36894	0.92945	0.39694	2.51929	1.07590	2.71050	21
40	0.36921	0.92935	0.39727	2.51715	1.07602	2.70851	20
41	0.36948	0.92924	0.39761	2.51502	1.07615	2.70653	19
42	0.36975	0.92913	0.39795	2.51289	1.07627	2.70455	18
43	0.37002	0.92902	0.39829	2.51076	1.07640	2.70258	17
44	0.37029	0.92892	0.39862	2.50864	1.07652	2.70061	16
45	0.37056	0.92881	0.39896	2.50652	1.07665	2.69864	15
46	0.37083	0.92870	0.39930	2.50440	1.07677	2.69667	14
47	0.37110	0.92859	0.39963	2.50229	1.07690	2.69471	13
48	0.37137	0.92849	0.39997	2.50018	1.07702	2.69275	12
49	0.37164	0.92838	0.40031	2.49807	1.07715	2.69079	11
50	0.37191	0.92827	0.40065	2.49597	1.07727	2.68884	10
51	0.37218	0.92816	0.40098	2.49386	1.07740	2.68689	9
52	0.37245	0.92805	0.40132	2.49177	1.07752	2.68494	8
53	0.37272	0.92794	0.40166	2.48967	1.07765	2.68299	7
54	0.37299	0.92784	0.40200	2.48758	1.07778	2.68105	6
55	0.37326	0.92773	0.40234	2.48549	1.07790	2.67911	5
56	0.37353	0.92762	0.40267	2.48340	1.07803	2.67718	4
57	0.37380	0.92751	0.40301	2.48132	1.07816	2.67525	3
58	0.37407	0.92740	0.40335	2.47924	1.07828	2.67332	2
59	0.37434	0.92729	0.40369	2.47716	1.07841	2.67139	1
60	0.37461	0.92718	0.40403	2.47509	1.07853	2.66947	0
	Cosin.	Sin.	Cotg.	Tang.	Cosec.	Sec.	

	Sin.	Cosin.	Tang.	Cotg.	Sec.	Cosec.	
0	0.37461	0.92718	0.40403	2.47509	1.07853	2.66947	60
1	0.37488	0.92707	0.40436	2.47302	1.07866	2.66755	59
2	0.37515	0.92697	0.40470	2.47095	1.07879	2.66563	58
3	0.37542	0.92686	0.40504	2.46888	1.07892	2.66371	57
4	0.37569	0.92675	0.40538	2.46682	1.07904	2.66180	56
5	0.37595	0.92664	0.40572	2.46476	1.07917	2.65989	55
6	0.37622	0.92653	0.40606	2.46270	1.07930	2.65799	54
7	0.37649	0.92642	0.40640	2.46065	1.07943	2.65609	53
8	0.37676	0.92631	0.40674	2.45860	1.07955	2.65419	52
9	0.37703	0.92620	0.40707	2.45655	1.07968	2.65229	51
10	0.37730	0.92609	0.40741	2.45451	1.07981	2.65040	50
11	0.37757	0.92598	0.40775	2.45246	1.07994	2.64851	49
12	0.37784	0.92587	0.40809	2.45043	1.08006	2.64662	48
13	0.37811	0.92576	0.40843	2.44839	1.08019	2.64473	47
14	0.37838	0.92565	0.40877	2.44636	1.08032	2.64285	46
15	0.37865	0.92554	0.40911	2.44433	1.08045	2.64097	45
16	0.37892	0.92543	0.40945	2.44230	1.08058	2.63909	44
17	0.37919	0.92532	0.40979	2.44027	1.08071	2.63722	43
18	0.37946	0.92521	0.41013	2.43825	1.08084	2.63535	42
19	0.37973	0.92510	0.41047	2.43623	1.08097	2.63348	41
20	0.37999	0.92499	0.41081	2.43422	1.08109	2.63162	40
21	0.38026	0.92488	0.41115	2.43220	1.08122	2.62976	39
22	0.38053	0.92477	0.41149	2.43019	1.08135	2.62790	38
23	0.38080	0.92466	0.41183	2.42819	1.08148	2.62604	37
24	0.38107	0.92455	0.41217	2.42618	1.08161	2.62419	36
25	0.38134	0.92444	0.41251	2.42418	1.08174	2.62234	35
26	0.38161	0.92432	0.41285	2.42218	1.08187	2.62049	34
27	0.38188	0.92421	0.41319	2.42019	1.08200	2.61864	33
28	0.38215	0.92410	0.41353	2.41819	1.08213	2.61680	32
29	0.38241	0.92399	0.41387	2.41620	1.08226	2.61496	31
30	0.38268	0.92388	0.41421	2.41421	1.08239	2.61313	30
31	0.38295	0.92377	0.41455	2.41223	1.08252	2.61129	29
32	0.38322	0.92366	0.41490	2.41025	1.08265	2.60946	28
33	0.38349	0.92355	0.41524	2.40827	1.08278	2.60763	27
34	0.38376	0.92343	0.41558	2.40629	1.08291	2.60581	26
35	0.38403	0.92332	0.41592	2.40432	1.08305	2.60399	25
36	0.38430	0.92321	0.41626	2.40235	1.08318	2.60217	24
37	0.38456	0.92310	0.41660	2.40038	1.08331	2.60035	23
38	0.38483	0.92299	0.41694	2.39841	1.08344	2.59853	22
39	0.38510	0.92287	0.41728	2.39645	1.08357	2.59672	21
40	0.38537	0.92276	0.41763	2.39449	1.08370	2.59491	20
41	0.38564	0.92265	0.41797	2.39253	1.08383	2.59311	19
42	0.38591	0.92254	0.41831	2.39058	1.08397	2.59130	18
43	0.38617	0.92243	0.41865	2.38863	1.08410	2.58950	17
44	0.38644	0.92231	0.41899	2.38668	1.08423	2.58771	16
45	0.38671	0.92220	0.41933	2.38473	1.08436	2.58591	15
46	0.38698	0.92209	0.41968	2.38279	1.08449	2.58412	14
47	0.38725	0.92198	0.42002	2.38084	1.08463	2.58233	13
48	0.38752	0.92186	0.42036	2.37891	1.08476	2.58054	12
49	0.38778	0.92175	0.42070	2.37697	1.08489	2.57876	11
50	0.38805	0.92164	0.42105	2.37504	1.08503	2.57698	10
51	0.38832	0.92152	0.42139	2.37311	1.08516	2.57520	9
52	0.38859	0.92141	0.42173	2.37118	1.08529	2.57342	8
53	0.38886	0.92130	0.42207	2.36925	1.08542	2.57165	7
54	0.38912	0.92119	0.42242	2.36733	1.08556	2.56988	6
55	0.38939	0.92107	0.42276	2.36541	1.08569	2.56811	5
56	0.38966	0.92096	0.42310	2.36349	1.08582	2.56634	4
57	0.38993	0.92085	0.42345	2.36158	1.08596	2.56458	3
58	0.39020	0.92073	0.42379	2.35967	1.08609	2.56282	2
59	0.39046	0.92062	0.42413	2.35776	1.08623	2.56106	1
60	0.39073	0.92050	0.42447	2.35585	1.08636	2.55930	0
	Cosin.	Sin.	Cotg.	Tang.	Cosec.	Sec.	

	Sin.	Cosin.	Tang.	Cotg.	Sec.	Cosec.	
0	0.39073	0.92050	0.42447	2.35585	1.08636	2.55930	60
1	0.39100	0.92039	0.42482	2.35395	1.08649	2.55755	59
2	0.39127	0.92028	0.42516	2.35205	1.08663	2.55580	58
3	0.39153	0.92016	0.42551	2.35015	1.08676	2.55405	57
4	0.39180	0.92005	0.42585	2.34825	1.08690	2.55231	56
5	0.39207	0.91994	0.42619	2.34636	1.08703	2.55057	55
6	0.39234	0.91982	0.42654	2.34447	1.08717	2.54883	54
7	0.39260	0.91971	0.42688	2.34258	1.08730	2.54709	53
8	0.39287	0.91959	0.42722	2.34069	1.08744	2.54536	52
9	0.39314	0.91948	0.42757	2.33881	1.08757	2.54363	51
10	0.39341	0.91936	0.42791	2.33693	1.08771	2.54190	50
11	0.39367	0.91925	0.42826	2.33505	1.08784	2.54017	49
12	0.39394	0.91914	0.42860	2.33317	1.08798	2.53845	48
13	0.39421	0.91902	0.42894	2.33130	1.08811	2.53672	47
14	0.39448	0.91891	0.42929	2.32943	1.08825	2.53500	46
15	0.39474	0.91879	0.42963	2.32756	1.08839	2.53329	45
16	0.39501	0.91868	0.42998	2.32570	1.08852	2.53157	44
17	0.39528	0.91856	0.43032	2.32383	1.08866	2.52986	43
18	0.39555	0.91845	0.43067	2.32197	1.08880	2.52815	42
19	0.39581	0.91833	0.43101	2.32012	1.08893	2.52645	41
20	0.39608	0.91822	0.43136	2.31826	1.08907	2.52474	40
21	0.39635	0.91810	0.43170	2.31641	1.08920	2.52304	39
22	0.39661	0.91799	0.43205	2.31456	1.08934	2.52134	38
23	0.39688	0.91787	0.43239	2.31271	1.08948	2.51965	37
24	0.39715	0.91775	0.43274	2.31086	1.08962	2.51795	36
25	0.39741	0.91764	0.43308	2.30902	1.08975	2.51626	35
26	0.39768	0.91752	0.43343	2.30718	1.08989	2.51457	34
27	0.39795	0.91741	0.43378	2.30534	1.09003	2.51289	33
28	0.39822	0.91729	0.43412	2.30351	1.09017	2.51120	32
29	0.39848	0.91718	0.43447	2.30167	1.09030	2.50952	31
30	0.39875	0.91706	0.43481	2.29984	1.09044	2.50784	30
31	0.39902	0.91694	0.43516	2.29801	1.09058	2.50617	29
32	0.39928	0.91683	0.43550	2.29619	1.09072	2.50449	28
33	0.39955	0.91671	0.43585	2.29437	1.09086	2.50282	27
34	0.39982	0.91660	0.43620	2.29254	1.09099	2.50115	26
35	0.40008	0.91648	0.43654	2.29073	1.09113	2.49948	25
36	0.40035	0.91636	0.43689	2.28891	1.09127	2.49782	24
37	0.40062	0.91625	0.43724	2.28710	1.09141	2.49616	23
38	0.40088	0.91613	0.43758	2.28528	1.09155	2.49450	22
39	0.40115	0.91601	0.43793	2.28348	1.09169	2.49284	21
40	0.40141	0.91590	0.43828	2.28167	1.09183	2.49119	20
41	0.40168	0.91578	0.43862	2.27987	1.09197	2.48954	19
42	0.40195	0.91566	0.43897	2.27806	1.09211	2.48789	18
43	0.40221	0.91555	0.43932	2.27626	1.09224	2.48624	17
44	0.40248	0.91543	0.43966	2.27447	1.09238	2.48459	16
45	0.40275	0.91531	0.44001	2.27267	1.09252	2.48295	15
46	0.40301	0.91519	0.44036	2.27088	1.09266	2.48131	14
47	0.40328	0.91508	0.44071	2.26909	1.09280	2.47967	13
48	0.40355	0.91496	0.44105	2.26730	1.09294	2.47804	12
49	0.40381	0.91484	0.44140	2.26552	1.09308	2.47640	11
50	0.40408	0.91472	0.44175	2.26374	1.09323	2.47477	10
51	0.40434	0.91461	0.44210	2.26196	1.09337	2.47314	9
52	0.40461	0.91449	0.44244	2.26018	1.09351	2.47152	8
53	0.40488	0.91437	0.44279	2.25840	1.09365	2.46989	7
54	0.40514	0.91425	0.44314	2.25663	1.09379	2.46827	6
55	0.40541	0.91414	0.44349	2.25486	1.09393	2.46665	5
56	0.40567	0.91402	0.44384	2.25309	1.09407	2.46504	4
57	0.40594	0.91390	0.44418	2.25132	1.09421	2.46342	3
58	0.40621	0.91378	0.44453	2.24956	1.09435	2.46181	2
59	0.40647	0.91366	0.44488	2.24780	1.09449	2.46020	1
60	0.40674	0.91355	0.44523	2.24604	1.09464	2.45859	0
	Cosin.	Sin.	Cotg.	Tang.	Cosec.	Sec.	

	Sin.	Cosin.	Tang.	Cotg.	Sec.	Cosec.	
0	0.40674	0.91355	0.44523	2.24604	1.09464	2.45859	60
1	0.40700	0.91343	0.44558	2.24428	1.09478	2.45699	59
2	0.40727	0.91331	0.44593	2.24252	1.09492	2.45539	58
3	0.40753	0.91319	0.44627	2.24077	1.09506	2.45378	57
4	0.40780	0.91307	0.44662	2.23902	1.09520	2.45219	56
5	0.40806	0.91295	0.44697	2.23727	1.09535	2.45059	55
6	0.40833	0.91283	0.44732	2.23553	1.09549	2.44900	54
7	0.40860	0.91272	0.44767	2.23378	1.09563	2.44741	53
8	0.40886	0.91260	0.44802	2.23204	1.09577	2.44582	52
9	0.40913	0.91248	0.44837	2.23030	1.09592	2.44423	51
10	0.40939	0.91236	0.44872	2.22857	1.09606	2.44264	50
11	0.40966	0.91224	0.44907	2.22683	1.09620	2.44106	49
12	0.40992	0.91212	0.44942	2.22510	1.09635	2.43948	48
13	0.41019	0.91200	0.44977	2.22337	1.09649	2.43790	47
14	0.41045	0.91188	0.45012	2.22164	1.09663	2.43633	46
15	0.41072	0.91176	0.45047	2.21992	1.09678	2.43476	45
16	0.41098	0.91164	0.45082	2.21819	1.09692	2.43318	44
17	0.41125	0.91152	0.45117	2.21647	1.09707	2.43162	43
18	0.41151	0.91140	0.45152	2.21475	1.09721	2.43005	42
19	0.41178	0.91128	0.45187	2.21304	1.09735	2.42848	41
20	0.41204	0.91116	0.45222	2.21132	1.09750	2.42692	40
21	0.41231	0.91104	0.45257	2.20961	1.09764	2.42536	39
22	0.41257	0.91092	0.45292	2.20790	1.09779	2.42380	38
23	0.41284	0.91080	0.45327	2.20619	1.09793	2.42225	37
24	0.41310	0.91068	0.45362	2.20449	1.09808	2.42070	36
25	0.41337	0.91056	0.45397	2.20278	1.09822	2.41914	35
26	0.41363	0.91044	0.45432	2.20108	1.09837	2.41760	34
27	0.41390	0.91032	0.45467	2.19938	1.09851	2.41605	33
28	0.41416	0.91020	0.45502	2.19769	1.09866	2.41450	32
29	0.41443	0.91008	0.45538	2.19599	1.09880	2.41296	31
30	0.41469	0.90996	0.45573	2.19430	1.09895	2.41142	30
31	0.41496	0.90984	0.45608	2.19261	1.09909	2.40988	29
32	0.41522	0.90972	0.45643	2.19092	1.09924	2.40835	28
33	0.41549	0.90960	0.45678	2.18923	1.09939	2.40681	27
34	0.41575	0.90948	0.45713	2.18755	1.09953	2.40528	26
35	0.41602	0.90936	0.45748	2.18587	1.09968	2.40475	25
36	0.41628	0.90924	0.45784	2.18419	1.09982	2.40222	24
37	0.41655	0.90911	0.45819	2.18251	1.09997	2.40070	23
38	0.41681	0.90899	0.45854	2.18084	1.10012	2.39918	22
39	0.41707	0.90887	0.45889	2.17916	1.10026	2.39766	21
40	0.41734	0.90875	0.45924	2.17749	1.10041	2.39614	20
41	0.41760	0.90863	0.45960	2.17582	1.10056	2.39462	19
42	0.41787	0.90851	0.45995	2.17416	1.10071	2.39311	18
43	0.41813	0.90839	0.46030	2.17249	1.10085	2.39159	17
44	0.41840	0.90826	0.46065	2.17083	1.10100	2.39008	16
45	0.41866	0.90814	0.46101	2.16917	1.10115	2.38857	15
46	0.41892	0.90802	0.46136	2.16751	1.10130	2.38707	14
47	0.41919	0.90790	0.46171	2.16585	1.10144	2.38556	13
48	0.41945	0.90778	0.46206	2.16420	1.10159	2.38406	12
49	0.41972	0.90766	0.46242	2.16255	1.10174	2.38256	11
50	0.41998	0.90753	0.46277	2.16090	1.10189	2.38107	10
51	0.42024	0.90741	0.46312	2.15925	1.10204	2.37957	9
52	0.42051	0.90729	0.46348	2.15760	1.10218	2.37808	8
53	0.42077	0.90717	0.46383	2.15596	1.10233	2.37658	7
54	0.42104	0.90704	0.46418	2.15432	1.10248	2.37509	6
55	0.42130	0.90692	0.46454	2.15268	1.10263	2.37361	5
56	0.42156	0.90680	0.46489	2.15104	1.10278	2.37212	4
57	0.42183	0.90668	0.46525	2.14940	1.10293	2.37064	3
58	0.42209	0.90655	0.46560	2.14777	1.10308	2.36916	2
59	0.42235	0.90643	0.46595	2.14614	1.10323	2.36768	1
60	0.42262	0.90631	0.46631	2.14451	1.10338	2.36620	0
	Cosin.	Sin.	Cotg.	Tang.	Cosec.	Sec.	

	Sin.	Cosin.	Tang.	Cotg.	Sec.	Cosec.	
0	0.42262	0.90631	0.46631	2.14451	1.10338	2.36620	60
1	0.42288	0.90618	0.46666	2.14288	1.10353	2.36473	59
2	0.42315	0.90606	0.46702	2.14125	1.10368	2.36325	58
3	0.42341	0.90594	0.46737	2.13963	1.10383	2.36178	57
4	0.42367	0.90582	0.46773	2.13801	1.10398	2.36031	56
5	0.42394	0.90569	0.46808	2.13639	1.10413	2.35885	55
6	0.42420	0.90557	0.46843	2.13477	1.10428	2.35738	54
7	0.42446	0.90545	0.46879	2.13316	1.10443	2.35592	53
8	0.42473	0.90532	0.46914	2.13154	1.10458	2.35446	52
9	0.42499	0.90520	0.46950	2.12993	1.10473	2.35300	51
10	0.42525	0.90507	0.46985	2.12832	1.10488	2.35154	50
11	0.42552	0.90495	0.47021	2.12671	1.10503	2.35009	49
12	0.42578	0.90483	0.47056	2.12511	1.10518	2.34863	48
13	0.42604	0.90470	0.47092	2.12350	1.10533	2.34718	47
14	0.42631	0.90458	0.47128	2.12190	1.10549	2.34573	46
15	0.42657	0.90446	0.47163	2.12030	1.10564	2.34429	45
16	0.42683	0.90433	0.47199	2.11871	1.10579	2.34284	44
17	0.42709	0.90421	0.47234	2.11711	1.10594	2.34140	43
18	0.42736	0.90408	0.47270	2.11552	1.10609	2.33996	42
19	0.42762	0.90396	0.47305	2.11392	1.10625	2.33852	41
20	0.42788	0.90383	0.47341	2.11233	1.10640	2.33708	40
21	0.42815	0.90371	0.47377	2.11075	1.10655	2.33565	39
22	0.42841	0.90358	0.47412	2.10916	1.10670	2.33422	38
23	0.42867	0.90346	0.47448	2.10758	1.10686	2.33278	37
24	0.42894	0.90334	0.47483	2.10600	1.10701	2.33135	36
25	0.42920	0.90321	0.47519	2.10442	1.10716	2.32993	35
26	0.42946	0.90308	0.47555	2.10284	1.10731	2.32850	34
27	0.42972	0.90296	0.47590	2.10126	1.10747	2.32708	33
28	0.42999	0.90284	0.47626	2.09969	1.10762	2.32566	32
29	0.43025	0.90271	0.47662	2.09811	1.10777	2.32424	31
30	0.43051	0.90259	0.47698	2.09654	1.10793	2.32282	30
31	0.43077	0.90246	0.47733	2.09498	1.10808	2.32140	29
32	0.43104	0.90233	0.47769	2.09341	1.10824	2.31999	28
33	0.43130	0.90221	0.47805	2.09184	1.10839	2.31857	27
34	0.43156	0.90208	0.47840	2.09028	1.10854	2.31717	26
35	0.43182	0.90196	0.47876	2.08872	1.10870	2.31576	25
36	0.43209	0.90183	0.47912	2.08716	1.10885	2.31436	24
37	0.43235	0.90171	0.47948	2.08560	1.10901	2.31295	23
38	0.43261	0.90158	0.47984	2.08405	1.10916	2.31155	22
39	0.43287	0.90146	0.48019	2.08250	1.10932	2.31015	21
40	0.43313	0.90133	0.48055	2.08094	1.10947	2.30875	20
41	0.43340	0.90120	0.48091	2.07939	1.10963	2.30735	19
42	0.43366	0.90108	0.48127	2.07785	1.10978	2.30596	18
43	0.43392	0.90095	0.48163	2.07630	1.10994	2.30457	17
44	0.43418	0.90082	0.48198	2.07476	1.11009	2.30318	16
45	0.43445	0.90070	0.48234	2.07321	1.11025	2.30179	15
46	0.43471	0.90057	0.48270	2.07167	1.11041	2.30040	14
47	0.43497	0.90045	0.48306	2.07014	1.11056	2.29901	13
48	0.43523	0.90032	0.48342	2.06860	1.11072	2.29763	12
49	0.43549	0.90019	0.48378	2.06706	1.11087	2.29625	11
50	0.43575	0.90007	0.48414	2.06553	1.11103	2.29487	10
51	0.43602	0.89994	0.48450	2.06400	1.11119	2.29349	9
52	0.43628	0.89981	0.48486	2.06247	1.11134	2.29211	8
53	0.43654	0.89968	0.48521	2.06094	1.11150	2.29074	7
54	0.43680	0.89956	0.48557	2.05942	1.11166	2.28937	6
55	0.43706	0.89943	0.48593	2.05790	1.11181	2.28800	5
56	0.43733	0.89930	0.48629	2.05637	1.11197	2.28663	4
57	0.43759	0.89918	0.48665	2.05485	1.11213	2.28526	3
58	0.43785	0.89905	0.48701	2.05333	1.11229	2.28390	2
59	0.43811	0.89892	0.48737	2.05182	1.11244	2.28253	1
60	0.43837	0.89879	0.48773	2.05030	1.11260	2.28117	0
	Cosin.	Sin.	Cotg.	Tang.	Cosec.	Sec.	

	Sin.	Cosin.	Tang.	Cotg.	Sec.	Cosec.	
0	0.43837	0.89879	0.48773	2.05030	1.11260	2.28117	60
1	0.43863	0.89867	0.48809	2.04879	1.11276	2.27981	59
2	0.43889	0.89854	0.48845	2.04728	1.11292	2.27845	58
3	0.43916	0.89841	0.48881	2.04577	1.11308	2.27710	57
4	0.43942	0.89828	0.48917	2.04426	1.11323	2.27574	56
5	0.43968	0.89816	0.48953	2.04276	1.11339	2.27439	55
6	0.43994	0.89803	0.48989	2.04125	1.11355	2.27304	54
7	0.44020	0.89790	0.49026	2.03975	1.11371	2.27169	53
8	0.44046	0.89777	0.49062	2.03825	1.11387	2.27035	52
9	0.44072	0.89764	0.49098	2.03675	1.11403	2.26900	51
10	0.44098	0.89752	0.49134	2.03526	1.11419	2.26766	50
11	0.44124	0.89739	0.49170	2.03376	1.11435	2.26632	49
12	0.44151	0.89726	0.49206	2.03227	1.11451	2.26498	48
13	0.44177	0.89713	0.49242	2.03078	1.11467	2.26364	47
14	0.44203	0.89700	0.49278	2.02929	1.11483	2.26230	46
15	0.44229	0.89687	0.49315	2.02780	1.11499	2.26097	45
16	0.44255	0.89674	0.49351	2.02631	1.11515	2.25963	44
17	0.44281	0.89662	0.49387	2.02483	1.11531	2.25830	43
18	0.44307	0.89649	0.49423	2.02335	1.11547	2.25697	42
19	0.44333	0.89636	0.49459	2.02187	1.11563	2.25565	41
20	0.44359	0.89623	0.49495	2.02039	1.11579	2.25432	40
21	0.44385	0.89610	0.49532	2.01891	1.11595	2.25300	39
22	0.44411	0.89597	0.49568	2.01743	1.11611	2.25167	38
23	0.44437	0.89584	0.49604	2.01596	1.11627	2.25035	37
24	0.44464	0.89571	0.49640	2.01449	1.11643	2.24903	36
25	0.44490	0.89558	0.49677	2.01302	1.11659	2.24772	35
26	0.44516	0.89545	0.49713	2.01155	1.11675	2.24640	34
27	0.44542	0.89532	0.49749	2.01008	1.11691	2.24509	33
28	0.44568	0.89519	0.49786	2.00862	1.11708	2.24378	32
29	0.44594	0.89506	0.49822	2.00715	1.11724	2.24247	31
30	0.44620	0.89493	0.49858	2.00569	1.11740	2.24116	30
31	0.44646	0.89480	0.49894	2.00423	1.11756	2.23985	29
32	0.44672	0.89467	0.49931	2.00277	1.11772	2.23855	28
33	0.44698	0.89454	0.49967	2.00131	1.11789	2.23724	27
34	0.44724	0.89441	0.50004	1.99986	1.11805	2.23594	26
35	0.44750	0.89428	0.50040	1.99841	1.11821	2.23464	25
36	0.44776	0.89415	0.50076	1.99695	1.11838	2.23334	24
37	0.44802	0.89402	0.50113	1.99550	1.11854	2.23205	23
38	0.44828	0.89389	0.50149	1.99406	1.11870	2.23075	22
39	0.44854	0.89376	0.50185	1.99261	1.11886	2.22946	21
40	0.44880	0.89363	0.50222	1.99116	1.11903	2.22817	20
41	0.44906	0.89350	0.50258	1.98972	1.11919	2.22688	19
42	0.44932	0.89337	0.50295	1.98828	1.11936	2.22559	18
43	0.44958	0.89324	0.50331	1.98684	1.11952	2.22430	17
44	0.44984	0.89311	0.50368	1.98540	1.11968	2.22302	16
45	0.45010	0.89298	0.50404	1.98396	1.11985	2.22174	15
46	0.45036	0.89285	0.50441	1.98253	1.12001	2.22045	14
47	0.45062	0.89272	0.50477	1.98110	1.12018	2.21918	13
48	0.45088	0.89259	0.50514	1.97966	1.12034	2.21790	12
49	0.45114	0.89245	0.50550	1.97823	1.12051	2.21662	11
50	0.45140	0.89232	0.50587	1.97681	1.12067	2.21535	10
51	0.45166	0.89219	0.50623	1.97538	1.12083	2.21407	9
52	0.45192	0.89206	0.50660	1.97395	1.12100	2.21280	8
53	0.45218	0.89193	0.50696	1.97253	1.12117	2.21153	7
54	0.45244	0.89180	0.50733	1.97111	1.12133	2.21026	6
55	0.45269	0.89167	0.50769	1.96969	1.12150	2.20900	5
56	0.45295	0.89153	0.50806	1.96827	1.12166	2.20773	4
57	0.45321	0.89140	0.50843	1.96685	1.12183	2.20647	3
58	0.45347	0.89127	0.50879	1.96544	1.12199	2.20521	2
59	0.45373	0.89114	0.50916	1.96402	1.12216	2.20395	1
60	0.45399	0.89101	0.50953	1.96261	1.12233	2.20269	0
	Cosin.	Sin.	Cotg.	Tang.	Cosec.	Sec.	

	Sin.	Cosin.	Tang.	Cotg.	Sec.	Cosec.	
0	0.45399	0.89101	0.50953	1.96261	1.12233	2.20269	60
1	0.45425	0.89087	0.50989	1.96120	1.12249	2.20143	59
2	0.45451	0.89074	0.51026	1.95979	1.12266	2.20018	58
3	0.45477	0.89061	0.51063	1.95838	1.12283	2.19892	57
4	0.45503	0.89048	0.51099	1.95698	1.12299	2.19767	56
5	0.45529	0.89035	0.51136	1.95557	1.12316	2.19642	55
6	0.45554	0.89021	0.51173	1.95417	1.12333	2.19517	54
7	0.45580	0.89008	0.51209	1.95277	1.12349	2.19393	53
8	0.45606	0.88995	0.51246	1.95137	1.12366	2.19268	52
9	0.45632	0.88981	0.51283	1.94997	1.12383	2.19144	51
10	0.45658	0.88968	0.51319	1.94858	1.12400	2.19019	50
11	0.45684	0.88955	0.51356	1.94718	1.12416	2.18895	49
12	0.45710	0.88942	0.51393	1.94579	1.12433	2.18772	48
13	0.45736	0.88928	0.51429	1.94440	1.12450	2.18648	47
14	0.45762	0.88915	0.51467	1.94301	1.12467	2.18524	46
15	0.45787	0.88902	0.51503	1.94162	1.12484	2.18401	45
16	0.45813	0.88888	0.51540	1.94023	1.12501	2.18277	44
17	0.45839	0.88875	0.51577	1.93885	1.12518	2.18154	43
18	0.45865	0.88862	0.51614	1.93746	1.12534	2.18031	42
19	0.45891	0.88848	0.51651	1.93608	1.12551	2.17909	41
20	0.45917	0.88835	0.51688	1.93470	1.12568	2.17786	40
21	0.45942	0.88822	0.51724	1.93332	1.12585	2.17663	39
22	0.45968	0.88808	0.51761	1.93195	1.12602	2.17541	38
23	0.45994	0.88795	0.51798	1.93057	1.12619	2.17419	37
24	0.46020	0.88782	0.51835	1.92920	1.12636	2.17297	36
25	0.46046	0.88768	0.51872	1.92782	1.12653	2.17175	35
26	0.46072	0.88755	0.51909	1.92645	1.12670	2.17053	34
27	0.46097	0.88741	0.51946	1.92508	1.12687	2.16932	33
28	0.46123	0.88728	0.51983	1.92371	1.12704	2.16810	32
29	0.46149	0.88715	0.52020	1.92235	1.12721	2.16689	31
30	0.46175	0.88701	0.52057	1.92098	1.12738	2.16568	30
31	0.46201	0.88688	0.52094	1.91962	1.12755	2.16447	29
32	0.46226	0.88674	0.52131	1.91826	1.12772	2.16326	28
33	0.46252	0.88661	0.52168	1.91690	1.12789	2.16206	27
34	0.46278	0.88647	0.52205	1.91554	1.12807	2.16085	26
35	0.46304	0.88634	0.52242	1.91418	1.12824	2.15965	25
36	0.46330	0.88620	0.52279	1.91282	1.12841	2.15845	24
37	0.46355	0.88607	0.52316	1.91147	1.12858	2.15725	23
38	0.46381	0.88593	0.52353	1.91012	1.12875	2.15605	22
39	0.46407	0.88580	0.52390	1.90876	1.12892	2.15485	21
40	0.46433	0.88566	0.52427	1.90741	1.12910	2.15366	20
41	0.46458	0.88553	0.52464	1.90607	1.12927	2.15246	19
42	0.46484	0.88539	0.52501	1.90472	1.12944	2.15127	18
43	0.46510	0.88526	0.52538	1.90337	1.12961	2.15008	17
44	0.46536	0.88512	0.52575	1.90203	1.12979	2.14889	16
45	0.46561	0.88499	0.52613	1.90069	1.12996	2.14770	15
46	0.46587	0.88485	0.52650	1.89935	1.13013	2.14651	14
47	0.46613	0.88472	0.52687	1.89801	1.13031	2.14533	13
48	0.46639	0.88458	0.52724	1.89667	1.13048	2.14414	12
49	0.46664	0.88445	0.52761	1.89533	1.13065	2.14296	11
50	0.46690	0.88431	0.52798	1.89400	1.13083	2.14178	10
51	0.46716	0.88417	0.52836	1.89266	1.13100	2.14060	9
52	0.46742	0.88404	0.52873	1.89133	1.13117	2.13942	8
53	0.46767	0.88390	0.52910	1.89000	1.13135	2.13825	7
54	0.46793	0.88377	0.52947	1.88867	1.13152	2.13707	6
55	0.46819	0.88363	0.52985	1.88734	1.13170	2.13590	5
56	0.46844	0.88349	0.53022	1.88602	1.13187	2.13473	4
57	0.46870	0.88336	0.53059	1.88469	1.13205	2.13356	3
58	0.46896	0.88322	0.53096	1.88337	1.13222	2.13239	2
59	0.46921	0.88308	0.53134	1.88205	1.13239	2.13122	1
60	0.46947	0.88295	0.53171	1.88073	1.13257	2.13005	0
	Cosin.	Sin.	Cotg.	Tang.	Cosec.	Sec.	

	Sin.	Cosin.	Tang.	Cotg.	Sec.	Cosec.	
0	0.46947	0.88295	0.53171	1.88073	1.13257	2.13005	60
1	0.46973	0.88281	0.53208	1.87941	1.13275	2.12889	59
2	0.46999	0.88267	0.53246	1.87809	1.13292	2.12773	58
3	0.47024	0.88254	0.53283	1.87677	1.13310	2.12657	57
4	0.47050	0.88240	0.53320	1.87546	1.13327	2.12540	56
5	0.47076	0.88226	0.53358	1.87415	1.13345	2.12425	55
6	0.47101	0.88213	0.53395	1.87283	1.13362	2.12309	54
7	0.47127	0.88199	0.53432	1.87152	1.13380	2.12193	53
8	0.47153	0.88185	0.53470	1.87021	1.13398	2.12078	52
9	0.47178	0.88172	0.53507	1.86891	1.13415	2.11963	51
10	0.47204	0.88158	0.53545	1.86760	1.13433	2.11847	50
11	0.47229	0.88144	0.53582	1.86630	1.13451	2.11732	49
12	0.47255	0.88130	0.53620	1.86499	1.13468	2.11617	48
13	0.47281	0.88117	0.53657	1.86369	1.13486	2.11503	47
14	0.47306	0.88103	0.53694	1.86239	1.13504	2.11388	46
15	0.47332	0.88089	0.53732	1.86109	1.13521	2.11274	45
16	0.47358	0.88075	0.53769	1.85979	1.13539	2.11159	44
17	0.47383	0.88062	0.53807	1.85850	1.13557	2.11045	43
18	0.47409	0.88048	0.53844	1.85720	1.13575	2.10931	42
19	0.47434	0.88034	0.53882	1.85591	1.13593	2.10817	41
20	0.47460	0.88020	0.53920	1.85462	1.13610	2.10704	40
21	0.47486	0.88006	0.53957	1.85333	1.13628	2.10590	39
22	0.47511	0.87993	0.53995	1.85204	1.13646	2.10477	38
23	0.47537	0.87979	0.54032	1.85075	1.13664	2.10363	37
24	0.47562	0.87965	0.54070	1.84946	1.13682	2.10250	36
25	0.47588	0.87951	0.54107	1.84818	1.13700	2.10137	35
26	0.47614	0.87937	0.54145	1.84689	1.13718	2.10024	34
27	0.47639	0.87923	0.54183	1.84561	1.13735	2.09911	33
28	0.47665	0.87909	0.54220	1.84433	1.13753	2.09799	32
29	0.47690	0.87896	0.54258	1.84305	1.13771	2.09686	31
30	0.47716	0.87882	0.54296	1.84177	1.13789	2.09574	30
31	0.47741	0.87868	0.54333	1.84049	1.13807	2.09462	29
32	0.47767	0.87854	0.54371	1.83922	1.13825	2.09350	28
33	0.47793	0.87840	0.54409	1.83794	1.13843	2.09238	27
34	0.47818	0.87826	0.54446	1.83667	1.13861	2.09126	26
35	0.47844	0.87812	0.54484	1.83540	1.13879	2.09014	25
36	0.47869	0.87798	0.54522	1.83413	1.13897	2.08903	24
37	0.47895	0.87784	0.54560	1.83286	1.13915	2.08791	23
38	0.47920	0.87770	0.54597	1.83159	1.13934	2.08680	22
39	0.47946	0.87756	0.54635	1.83033	1.13952	2.08569	21
40	0.47971	0.87743	0.54673	1.82906	1.13970	2.08458	20
41	0.47997	0.87729	0.54711	1.82780	1.13988	2.08347	19
42	0.48022	0.87715	0.54748	1.82654	1.14006	2.08236	18
43	0.48048	0.87701	0.54786	1.82528	1.14024	2.08126	17
44	0.48073	0.87687	0.54824	1.82402	1.14042	2.08015	16
45	0.48099	0.87673	0.54862	1.82276	1.14061	2.07905	15
46	0.48124	0.87659	0.54900	1.82150	1.14079	2.07795	14
47	0.48150	0.87645	0.54938	1.82025	1.14097	2.07685	13
48	0.48175	0.87631	0.54975	1.81899	1.14115	2.07575	12
49	0.48201	0.87617	0.55013	1.81774	1.14134	2.07465	11
50	0.48226	0.87603	0.55051	1.81649	1.14152	2.07356	10
51	0.48252	0.87589	0.55089	1.81524	1.14170	2.07246	9
52	0.48277	0.87575	0.55127	1.81399	1.14188	2.07137	8
53	0.48303	0.87561	0.55165	1.81274	1.14207	2.07027	7
54	0.48328	0.87546	0.55203	1.81150	1.14225	2.06918	6
55	0.48354	0.87532	0.55241	1.81025	1.14243	2.06809	5
56	0.48379	0.87518	0.55279	1.80901	1.14262	2.06701	4
57	0.48405	0.87504	0.55317	1.80777	1.14280	2.06592	3
58	0.48430	0.87490	0.55355	1.80653	1.14299	2.06483	2
59	0.48456	0.87476	0.55393	1.80529	1.14317	2.06375	1
60	0.48481	0.87462	0.55431	1.80405	1.14335	2.06267	0
	Cosin.	Sin.	Cotg.	Tang.	Cosec.	Sec.	

	Sin.	Cosin.	Tang.	Cotg.	Sec.	Cosec.	
0	0.48181	0.87462	0.55431	1.80405	1.14335	2.06267	60
1	0.48506	0.87448	0.55469	1.80281	1.14354	2.06158	59
2	0.48832	0.87434	0.55507	1.80158	1.14372	2.06050	58
3	0.48557	0.87420	0.55545	1.80034	1.14391	2.05942	57
4	0.48583	0.87406	0.55583	1.79911	1.14409	2.05835	56
5	0.48608	0.87391	0.55621	1.79788	1.14428	2.05727	55
6	0.48634	0.87377	0.55659	1.79665	1.14446	2.05619	54
7	0.48659	0.87363	0.55697	1.79542	1.14465	2.05512	53
8	0.48684	0.87349	0.55736	1.79419	1.14483	2.05405	52
9	0.48710	0.87335	0.55774	1.79296	1.14502	2.05298	51
10	0.48735	0.87321	0.55812	1.79174	1.14521	2.05191	50
11	0.48761	0.87306	0.55850	1.79051	1.14539	2.05084	49
12	0.48786	0.87292	0.55888	1.78929	1.14558	2.04977	48
13	0.48811	0.87278	0.55926	1.78807	1.14576	2.04870	47
14	0.48837	0.87264	0.55964	1.78685	1.14595	2.04764	46
15	0.48862	0.87250	0.56003	1.78563	1.14614	2.04657	45
16	0.48888	0.87235	0.56041	1.78441	1.14632	2.04551	44
17	0.48913	0.87221	0.56079	1.78319	1.14651	2.04445	43
18	0.48938	0.87207	0.56117	1.78198	1.14670	2.04339	42
19	0.48964	0.87193	0.56156	1.78077	1.14689	2.04233	41
20	0.48989	0.87178	0.56194	1.77955	1.14707	2.04128	40
21	0.49014	0.87164	0.56232	1.77834	1.14726	2.04022	39
22	0.49040	0.87150	0.56270	1.77713	1.14745	2.03916	38
23	0.49065	0.87136	0.56309	1.77592	1.14764	2.03811	37
24	0.49090	0.87121	0.56347	1.77471	1.14782	2.03706	36
25	0.49116	0.87107	0.56385	1.77351	1.14801	2.03601	35
26	0.49141	0.87093	0.56424	1.77230	1.14820	2.03496	34
27	0.49166	0.87079	0.56462	1.77110	1.14839	2.03391	33
28	0.49192	0.87064	0.56501	1.76990	1.14858	2.03286	32
29	0.49217	0.87050	0.56539	1.76869	1.14877	2.03182	31
30	0.49242	0.87036	0.56577	1.76749	1.14896	2.03077	30
31	0.49268	0.87021	0.56616	1.76629	1.14914	2.02973	29
32	0.49293	0.87007	0.56654	1.76510	1.14933	2.02869	28
33	0.49318	0.86993	0.56693	1.76390	1.14952	2.02765	27
34	0.49344	0.86978	0.56731	1.76271	1.14971	2.02661	26
35	0.49369	0.86964	0.56769	1.76151	1.14990	2.02557	25
36	0.49394	0.86949	0.56808	1.76032	1.15009	2.02453	24
37	0.49419	0.86935	0.56846	1.75913	1.15028	2.02349	23
38	0.49445	0.86921	0.56885	1.75794	1.15047	2.02246	22
39	0.49470	0.86906	0.56923	1.75675	1.15066	2.02143	21
40	0.49495	0.86892	0.56962	1.75556	1.15085	2.02039	20
41	0.49521	0.86878	0.57000	1.75437	1.15105	2.01936	19
42	0.49546	0.86863	0.57039	1.75319	1.15124	2.01833	18
43	0.49571	0.86849	0.57078	1.75200	1.15143	2.01730	17
44	0.49596	0.86834	0.57116	1.75082	1.15162	2.01628	16
45	0.49622	0.86820	0.57155	1.74964	1.15181	2.01525	15
46	0.49647	0.86805	0.57193	1.74846	1.15200	2.01422	14
47	0.49672	0.86791	0.57232	1.74728	1.15219	2.01320	13
48	0.49697	0.86777	0.57271	1.74610	1.15239	2.01218	12
49	0.49723	0.86762	0.57309	1.74492	1.15258	2.01116	11
50	0.49748	0.86748	0.57348	1.74375	1.15277	2.01014	10
51	0.49773	0.86733	0.57386	1.74257	1.15296	2.00912	9
52	0.49798	0.86719	0.57425	1.74140	1.15315	2.00810	8
53	0.49824	0.86704	0.57464	1.74022	1.15335	2.00708	7
54	0.49849	0.86690	0.57503	1.73905	1.15354	2.00607	6
55	0.49874	0.86675	0.57541	1.73788	1.15373	2.00505	5
56	0.49899	0.86661	0.57580	1.73671	1.15393	2.00404	4
57	0.49924	0.86646	0.57619	1.73555	1.15412	2.00303	3
58	0.49950	0.86632	0.57657	1.73438	1.15431	2.00202	2
59	0.49975	0.86617	0.57696	1.73321	1.15451	2.00101	1
60	0.50000	0.86603	0.57735	1.73205	1.15470	2.00000	0
	Cosin.	Sin.	Cotg.	Tang.	Cosec.	Sec.	

	Sin.	Cosin.	Tang.	Cotg.	Sec.	Cosec.	
0	0.50000	0.86603	0.57735	1.73205	1.15470	2.00000	60
1	0.50025	0.86588	0.57774	1.73089	1.15489	1.99899	59
2	0.50050	0.86573	0.57813	1.72973	1.15509	1.99799	58
3	0.50076	0.86559	0.57851	1.72857	1.15528	1.99698	57
4	0.50101	0.86544	0.57890	1.72741	1.15548	1.99598	56
5	0.50126	0.86530	0.57929	1.72625	1.15567	1.99498	55
6	0.50151	0.86515	0.57968	1.72509	1.15587	1.99398	54
7	0.50176	0.86501	0.58007	1.72393	1.15606	1.99298	53
8	0.50201	0.86486	0.58046	1.72278	1.15626	1.99198	52
9	0.50227	0.86471	0.58085	1.72163	1.15645	1.99098	51
10	0.50252	0.86457	0.58124	1.72047	1.15665	1.98998	50
11	0.50277	0.86442	0.58162	1.71932	1.15684	1.98899	49
12	0.50302	0.86427	0.58201	1.71817	1.15704	1.98799	48
13	0.50327	0.86413	0.58240	1.71702	1.15724	1.98700	47
14	0.50352	0.86398	0.58279	1.71588	1.15743	1.98601	46
15	0.50377	0.86384	0.58318	1.71473	1.15763	1.98502	45
16	0.50403	0.86369	0.58357	1.71358	1.15782	1.98403	44
17	0.50428	0.86354	0.58396	1.71244	1.15802	1.98304	43
18	0.50453	0.86340	0.58435	1.71129	1.15822	1.98205	42
19	0.50478	0.86325	0.58474	1.71015	1.15841	1.98107	41
20	0.50503	0.86310	0.58513	1.70901	1.15861	1.98008	40
21	0.50528	0.86295	0.58552	1.70787	1.15881	1.97910	39
22	0.50553	0.86281	0.58591	1.70673	1.15901	1.97811	38
23	0.50578	0.86266	0.58631	1.70560	1.15920	1.97713	37
24	0.50603	0.86251	0.58670	1.70446	1.15940	1.97615	36
25	0.50628	0.86237	0.58709	1.70332	1.15960	1.97517	35
26	0.50654	0.86222	0.58748	1.70219	1.15980	1.97420	34
27	0.50679	0.86207	0.58787	1.70106	1.16000	1.97322	33
28	0.50704	0.86192	0.58826	1.69992	1.16019	1.97224	32
29	0.50729	0.86178	0.58865	1.69879	1.16039	1.97127	31
30	0.50754	0.86163	0.58905	1.69766	1.16059	1.97029	30
31	0.50779	0.86148	0.58944	1.69653	1.16079	1.96932	29
32	0.50804	0.86133	0.58983	1.69541	1.16099	1.96835	28
33	0.50829	0.86119	0.59022	1.69428	1.16119	1.96738	27
34	0.50854	0.86104	0.59061	1.69316	1.16139	1.96641	26
35	0.50879	0.86089	0.59101	1.69203	1.16159	1.96544	25
36	0.50904	0.86074	0.59140	1.69091	1.16179	1.96448	24
37	0.50929	0.86059	0.59179	1.68979	1.16199	1.96351	23
38	0.50954	0.86045	0.59218	1.68866	1.16219	1.96255	22
39	0.50979	0.86030	0.59258	1.68754	1.16239	1.96158	21
40	0.51004	0.86015	0.59297	1.68643	1.16259	1.96062	20
41	0.51029	0.86000	0.59336	1.68531	1.16279	1.95966	19
42	0.51054	0.85985	0.59376	1.68419	1.16299	1.95870	18
43	0.51079	0.85970	0.59415	1.68308	1.16319	1.95774	17
44	0.51104	0.85956	0.59454	1.68196	1.16339	1.95678	16
45	0.51129	0.85941	0.59494	1.68085	1.16359	1.95583	15
46	0.51154	0.85926	0.59533	1.67974	1.16380	1.95487	14
47	0.51179	0.85911	0.59573	1.67863	1.16400	1.95392	13
48	0.51204	0.85896	0.59612	1.67752	1.16420	1.95296	12
49	0.51229	0.85881	0.59651	1.67641	1.16440	1.95201	11
50	0.51254	0.85866	0.59691	1.67530	1.16460	1.95106	10
51	0.51279	0.85851	0.59730	1.67419	1.16481	1.95011	9
52	0.51304	0.85836	0.59770	1.67309	1.16501	1.94916	8
53	0.51329	0.85821	0.59809	1.67198	1.16521	1.94821	7
54	0.51354	0.85806	0.59849	1.67088	1.16541	1.94726	6
55	0.51379	0.85792	0.59888	1.66978	1.16562	1.94632	5
56	0.51404	0.85777	0.59928	1.66867	1.16582	1.94537	4
57	0.51429	0.85762	0.59967	1.66757	1.16602	1.94443	3
58	0.51454	0.85747	0.60007	1.66647	1.16623	1.94349	2
59	0.51479	0.85732	0.60046	1.66538	1.16643	1.94254	1
60	0.51504	0.85717	0.60086	1.66428	1.16663	1.94160	0
	Cosin.	Sin.	Cotg.	Tang.	Cosec.	Sec.	

	Sin.	Cosin.	Tang.	Cotg.	Sec.	Cosec.	
0	0.51504	0.85717	0.60086	1.66428	1.16663	1.94160	60
1	0.51529	0.85702	0.60126	1.66318	1.16684	1.94066	59
2	0.51554	0.85687	0.60165	1.66209	1.16704	1.93973	58
3	0.51579	0.85672	0.60205	1.66099	1.16725	1.93879	57
4	0.51604	0.85657	0.60245	1.65990	1.16745	1.93785	56
5	0.51628	0.85642	0.60284	1.65881	1.16766	1.93692	55
6	0.51653	0.85627	0.60324	1.65772	1.16786	1.93598	54
7	0.51678	0.85612	0.60364	1.65663	1.16806	1.93505	53
8	0.51703	0.85597	0.60403	1.65554	1.16827	1.93412	52
9	0.51728	0.85582	0.60443	1.65445	1.16848	1.93319	51
10	0.51753	0.85567	0.60483	1.65337	1.16868	1.93226	50
11	0.51778	0.85551	0.60522	1.65228	1.16889	1.93133	49
12	0.51803	0.85536	0.60562	1.65120	1.16909	1.93040	48
13	0.51828	0.85521	0.60602	1.65011	1.16930	1.92947	47
14	0.51852	0.85506	0.60642	1.64903	1.16950	1.92855	46
15	0.51877	0.85491	0.60681	1.64795	1.16971	1.92762	45
16	0.51902	0.85476	0.60721	1.64687	1.16992	1.92670	44
17	0.51927	0.85461	0.60761	1.64579	1.17012	1.92578	43
18	0.51952	0.85446	0.60801	1.64471	1.17033	1.92486	42
19	0.51977	0.85431	0.60841	1.64363	1.17054	1.92394	41
20	0.52002	0.85416	0.60881	1.64256	1.17075	1.92302	40
21	0.52026	0.85401	0.60921	1.64148	1.17095	1.92210	39
22	0.52051	0.85385	0.60960	1.64041	1.17116	1.92118	38
23	0.52076	0.85370	0.61000	1.63934	1.17137	1.92027	37
24	0.52101	0.85355	0.61040	1.63826	1.17158	1.91935	36
25	0.52126	0.85340	0.61080	1.63719	1.17178	1.91844	35
26	0.52151	0.85325	0.61120	1.63612	1.17199	1.91752	34
27	0.52175	0.85310	0.61160	1.63505	1.17220	1.91661	33
28	0.52200	0.85294	0.61200	1.63398	1.17241	1.91570	32
29	0.52225	0.85279	0.61240	1.63292	1.17262	1.91479	31
30	0.52250	0.85264	0.61280	1.63185	1.17283	1.91388	30
31	0.52275	0.85249	0.61320	1.63079	1.17304	1.91297	29
32	0.52299	0.85234	0.61360	1.62972	1.17325	1.91207	28
33	0.52324	0.85218	0.61400	1.62866	1.17346	1.91116	27
34	0.52349	0.85203	0.61440	1.62760	1.17367	1.91026	26
35	0.52374	0.85188	0.61480	1.62654	1.17388	1.90935	25
36	0.52399	0.85173	0.61520	1.62548	1.17409	1.90845	24
37	0.52423	0.85157	0.61561	1.62442	1.17430	1.90755	23
38	0.52448	0.85142	0.61601	1.62336	1.17451	1.90665	22
39	0.52473	0.85127	0.61641	1.62230	1.17472	1.90575	21
40	0.52498	0.85112	0.61681	1.62125	1.17493	1.90485	20
41	0.52522	0.85096	0.61721	1.62019	1.17514	1.90395	19
42	0.52547	0.85081	0.61761	1.61914	1.17535	1.90305	18
43	0.52572	0.85066	0.61801	1.61809	1.17556	1.90216	17
44	0.52597	0.85051	0.61842	1.61703	1.17577	1.90126	16
45	0.52621	0.85035	0.61882	1.61598	1.17598	1.90037	15
46	0.52646	0.85020	0.61922	1.61493	1.17620	1.89948	14
47	0.52671	0.85005	0.61962	1.61388	1.17641	1.89858	13
48	0.52696	0.84989	0.62003	1.61283	1.17662	1.89769	12
49	0.52720	0.84974	0.62043	1.61179	1.17683	1.89680	11
50	0.52745	0.84959	0.62083	1.61074	1.17704	1.89591	10
51	0.52770	0.84943	0.62124	1.60970	1.17726	1.89503	9
52	0.52794	0.84928	0.62164	1.60865	1.17747	1.89414	8
53	0.52819	0.84913	0.62204	1.60761	1.17768	1.89325	7
54	0.52844	0.84897	0.62245	1.60657	1.17790	1.89237	6
55	0.52869	0.84882	0.62285	1.60553	1.17811	1.89148	5
56	0.52893	0.84866	0.62325	1.60449	1.17832	1.89060	4
57	0.52918	0.84851	0.62366	1.60345	1.17854	1.88972	3
58	0.52943	0.84836	0.62406	1.60241	1.17875	1.88884	2
59	0.52967	0.84820	0.62446	1.60137	1.17896	1.88796	1
60	0.52992	0.84805	0.62487	1.60033	1.17918	1.88708	0
	Cosin.	Sin.	Cotg.	Tang.	Cosec.	Sec.	

	Sin.	Cosin.	Tang.	Cotg.	Sec.	Cosec.	
0	0.52992	0.84805	0.62487	1.60033	1.17918	1.88708	60
1	0.53017	0.84789	0.62527	1.59930	1.17939	1.88620	59
2	0.53041	0.84774	0.62568	1.59826	1.17961	1.88532	58
3	0.53066	0.84759	0.62608	1.59723	1.17982	1.88445	57
4	0.53091	0.84743	0.62649	1.59620	1.18004	1.88357	56
5	0.53115	0.84728	0.62689	1.59517	1.18025	1.88270	55
6	0.53140	0.84712	0.62730	1.59414	1.18047	1.88183	54
7	0.53164	0.84697	0.62770	1.59311	1.18068	1.88095	53
8	0.53189	0.84681	0.62811	1.59208	1.18090	1.88008	52
9	0.53214	0.84666	0.62852	1.59105	1.18111	1.87921	51
10	0.53238	0.84650	0.62892	1.59002	1.18133	1.87834	50
11	0.53263	0.84635	0.62933	1.58900	1.18155	1.87748	49
12	0.53288	0.84619	0.62973	1.58797	1.18176	1.87661	48
13	0.53312	0.84604	0.63014	1.58695	1.18198	1.87574	47
14	0.53337	0.84588	0.63055	1.58593	1.18220	1.87488	46
15	0.53361	0.84573	0.63095	1.58490	1.18241	1.87401	45
16	0.53386	0.84557	0.63136	1.58388	1.18263	1.87315	44
17	0.53411	0.84542	0.63177	1.58286	1.18285	1.87229	43
18	0.53435	0.84526	0.63217	1.58184	1.18307	1.87142	42
19	0.53460	0.84511	0.63258	1.58083	1.18328	1.87056	41
20	0.53484	0.84495	0.63299	1.57981	1.18350	1.86970	40
21	0.53509	0.84480	0.63340	1.57879	1.18372	1.86885	39
22	0.53534	0.84464	0.63380	1.57778	1.18394	1.86799	38
23	0.53558	0.84448	0.63421	1.57676	1.18416	1.86713	37
24	0.53583	0.84433	0.63462	1.57575	1.18437	1.86627	36
25	0.53607	0.84417	0.63503	1.57474	1.18459	1.86542	35
26	0.53632	0.84402	0.63544	1.57372	1.18481	1.86457	34
27	0.53656	0.84386	0.63584	1.57271	1.18503	1.86371	33
28	0.53681	0.84370	0.63625	1.57170	1.18525	1.86286	32
29	0.53705	0.84355	0.63666	1.57069	1.18547	1.86201	31
30	0.53730	0.84339	0.63707	1.56969	1.18569	1.86116	30
31	0.53754	0.84324	0.63748	1.56868	1.18591	1.86031	29
32	0.53779	0.84308	0.63789	1.56767	1.18613	1.85946	28
33	0.53804	0.84292	0.63830	1.56667	1.18635	1.85861	27
34	0.53828	0.84277	0.63871	1.56566	1.18657	1.85777	26
35	0.53853	0.84261	0.63912	1.56466	1.18679	1.85692	25
36	0.53877	0.84245	0.63953	1.56366	1.18701	1.85608	24
37	0.53902	0.84230	0.63994	1.56265	1.18723	1.85523	23
38	0.53926	0.84214	0.64035	1.56165	1.18745	1.85439	22
39	0.53951	0.84198	0.64076	1.56065	1.18767	1.85355	21
40	0.53975	0.84182	0.64117	1.55966	1.18790	1.85271	20
41	0.54000	0.84167	0.64158	1.55866	1.18812	1.85187	19
42	0.54024	0.84151	0.64199	1.55766	1.18834	1.85103	18
43	0.54049	0.84135	0.64240	1.55666	1.18856	1.85019	17
44	0.54073	0.84120	0.64281	1.55567	1.18878	1.84935	16
45	0.54097	0.84104	0.64322	1.55467	1.18901	1.84852	15
46	0.54122	0.84088	0.64363	1.55368	1.18923	1.84768	14
47	0.54146	0.84072	0.64404	1.55269	1.18945	1.84685	13
48	0.54171	0.84057	0.64446	1.55170	1.18967	1.84601	12
49	0.54195	0.84041	0.64487	1.55071	1.18990	1.84518	11
50	0.54220	0.84025	0.64528	1.54972	1.19012	1.84435	10
51	0.54244	0.84009	0.64569	1.54873	1.19034	1.84352	9
52	0.54269	0.83994	0.64610	1.54774	1.19057	1.84269	8
53	0.54293	0.83978	0.64652	1.54675	1.19079	1.84186	7
54	0.54317	0.83962	0.64693	1.54576	1.19102	1.84103	6
55	0.54342	0.83946	0.64734	1.54478	1.19124	1.84020	5
56	0.54366	0.83930	0.64775	1.54379	1.19146	1.83938	4
57	0.54391	0.83915	0.64817	1.54281	1.19169	1.83855	3
58	0.54415	0.83899	0.64858	1.54183	1.19191	1.83773	2
59	0.54440	0.83883	0.64899	1.54085	1.19214	1.83690	1
60	0.54464	0.83867	0.64941	1.53986	1.19236	1.83608	0
	Cosin.	Sin.	Cotg.	Tang.	Cosec.	Sec.	

	Sin.	Cosin.	Tang.	Cotg.	Sec.	Cosec.	
0	0.54464	0.83867	0.64941	1.53986	1.19236	1.83608	60
1	0.54488	0.83851	0.64982	1.53888	1.19259	1.83526	59
2	0.54513	0.83835	0.65024	1.53791	1.19281	1.83444	58
3	0.54537	0.83819	0.65065	1.53693	1.19304	1.83362	57
4	0.54561	0.83804	0.65106	1.53595	1.19327	1.83280	56
5	0.54586	0.83788	0.65148	1.53497	1.19349	1.83198	55
6	0.54610	0.83772	0.65189	1.53400	1.19372	1.83116	54
7	0.54635	0.83756	0.65231	1.53302	1.19394	1.83034	53
8	0.54659	0.83740	0.65272	1.53205	1.19417	1.82953	52
9	0.54683	0.83724	0.65314	1.53107	1.19440	1.82871	51
10	0.54708	0.83708	0.65355	1.53010	1.19463	1.82790	50
11	0.54732	0.83692	0.65397	1.52913	1.19485	1.82709	49
12	0.54756	0.83676	0.65438	1.52816	1.19508	1.82627	48
13	0.54781	0.83660	0.65480	1.52719	1.19531	1.82546	47
14	0.54805	0.83645	0.65521	1.52622	1.19553	1.82465	46
15	0.54829	0.83629	0.65563	1.52525	1.19576	1.82384	45
16	0.54854	0.83613	0.65604	1.52429	1.19599	1.82303	44
17	0.54878	0.83597	0.65646	1.52332	1.19622	1.82222	43
18	0.54902	0.83581	0.65688	1.52235	1.19645	1.82142	42
19	0.54927	0.83565	0.65729	1.52139	1.19668	1.82061	41
20	0.54951	0.83549	0.65771	1.52043	1.19691	1.81981	40
21	0.54975	0.83533	0.65813	1.51946	1.19713	1.81900	39
22	0.54999	0.83517	0.65854	1.51850	1.19736	1.81820	38
23	0.55024	0.83501	0.65896	1.51754	1.19759	1.81740	37
24	0.55048	0.83485	0.65938	1.51658	1.19782	1.81659	36
25	0.55072	0.83469	0.65980	1.51562	1.19805	1.81579	35
26	0.55097	0.83453	0.66021	1.51466	1.19828	1.81499	34
27	0.55121	0.83437	0.66063	1.51370	1.19851	1.81419	33
28	0.55145	0.83421	0.66105	1.51275	1.19874	1.81340	32
29	0.55169	0.83405	0.66147	1.51179	1.19897	1.81260	31
30	0.55194	0.83389	0.66189	1.51084	1.19920	1.81180	30
31	0.55218	0.83373	0.66230	1.50988	1.19944	1.81101	29
32	0.55242	0.83356	0.66272	1.50893	1.19967	1.81021	28
33	0.55266	0.83340	0.66314	1.50797	1.19990	1.80942	27
34	0.55291	0.83324	0.66356	1.50702	1.20013	1.80862	26
35	0.55315	0.83308	0.66398	1.50607	1.20036	1.80783	25
36	0.55339	0.83292	0.66440	1.50512	1.20059	1.80704	24
37	0.55363	0.83276	0.66482	1.50417	1.20083	1.80625	23
38	0.55388	0.83260	0.66524	1.50322	1.20106	1.80546	22
39	0.55412	0.83244	0.66566	1.50228	1.20129	1.80467	21
40	0.55436	0.83228	0.66608	1.50133	1.20152	1.80388	20
41	0.55460	0.83212	0.66650	1.50038	1.20176	1.80309	19
42	0.55484	0.83195	0.66692	1.49944	1.20199	1.80231	18
43	0.55509	0.83179	0.66734	1.49849	1.20222	1.80152	17
44	0.55533	0.83163	0.66776	1.49755	1.20246	1.80074	16
45	0.55557	0.83147	0.66818	1.49661	1.20269	1.79995	15
46	0.55581	0.83131	0.66860	1.49566	1.20292	1.79917	14
47	0.55605	0.83115	0.66902	1.49472	1.20316	1.79839	13
48	0.55630	0.83098	0.66944	1.49378	1.20339	1.79761	12
49	0.55654	0.83082	0.66986	1.49284	1.20363	1.79682	11
50	0.55678	0.83066	0.67028	1.49190	1.20386	1.79604	10
51	0.55702	0.83050	0.67071	1.49097	1.20410	1.79527	9
52	0.55726	0.83034	0.67113	1.49003	1.20433	1.79449	8
53	0.55750	0.83017	0.67155	1.48909	1.20457	1.79371	7
54	0.55775	0.83001	0.67197	1.48816	1.20480	1.79293	6
55	0.55799	0.82985	0.67239	1.48722	1.20504	1.79216	5
56	0.55823	0.82969	0.67282	1.48629	1.20527	1.79138	4
57	0.55847	0.82953	0.67324	1.48536	1.20551	1.79061	3
58	0.55871	0.82936	0.67366	1.48442	1.20575	1.78984	2
59	0.55895	0.82920	0.67409	1.48349	1.20598	1.78906	1
60	0.55919	0.82904	0.67451	1.48256	1.20622	1.78829	0
	Cosin.	Sin.	Cotg.	Tang.	Cosec.	Sec.	

	Sin.	Cosin.	Tang.	Cotg.	Sec.	Cosec.	
0	0.55919	0.82904	0.67451	1.48256	1.20622	1.78829	60
1	0.55943	0.82887	0.67493	1.48163	1.20645	1.78752	59
2	0.55968	0.82871	0.67536	1.48070	1.20669	1.78675	58
3	0.55992	0.82855	0.67578	1.47977	1.20693	1.78598	57
4	0.56016	0.82839	0.67620	1.47885	1.20717	1.78521	56
5	0.56040	0.82822	0.67663	1.47792	1.20740	1.78445	55
6	0.56064	0.82806	0.67705	1.47699	1.20764	1.78368	54
7	0.56088	0.82790	0.67748	1.47607	1.20788	1.78291	53
8	0.56112	0.82773	0.67790	1.47514	1.20812	1.78215	52
9	0.56136	0.82757	0.67832	1.47422	1.20836	1.78138	51
10	0.56160	0.82741	0.67875	1.47330	1.20859	1.78062	50
11	0.56184	0.82724	0.67917	1.47238	1.20883	1.77986	49
12	0.56208	0.82708	0.67960	1.47146	1.20907	1.77910	48
13	0.56232	0.82692	0.68002	1.47053	1.20931	1.77833	47
14	0.56256	0.82675	0.68045	1.46962	1.20955	1.77757	46
15	0.56280	0.82659	0.68088	1.46870	1.20979	1.77681	45
16	0.56304	0.82643	0.68130	1.46778	1.21003	1.77606	44
17	0.56329	0.82626	0.68173	1.46686	1.21027	1.77530	43
18	0.56353	0.82610	0.68215	1.46595	1.21051	1.77454	42
19	0.56377	0.82593	0.68258	1.46503	1.21075	1.77378	41
20	0.56401	0.82577	0.68301	1.46411	1.21099	1.77303	40
21	0.56425	0.82561	0.68343	1.46320	1.21123	1.77227	39
22	0.56449	0.82544	0.68386	1.46229	1.21147	1.77152	38
23	0.56473	0.82528	0.68429	1.46137	1.21171	1.77077	37
24	0.56497	0.82511	0.68471	1.46046	1.21195	1.77001	36
25	0.56521	0.82495	0.68514	1.45955	1.21220	1.76926	35
26	0.56545	0.82478	0.68557	1.45864	1.21244	1.76851	34
27	0.56569	0.82462	0.68600	1.45773	1.21268	1.76776	33
28	0.56593	0.82446	0.68642	1.45682	1.21292	1.76701	32
29	0.56617	0.82429	0.68685	1.45592	1.21316	1.76626	31
30	0.56641	0.82413	0.68728	1.45501	1.21341	1.76552	30
31	0.56665	0.82396	0.68771	1.45410	1.21365	1.76477	29
32	0.56689	0.82380	0.68814	1.45320	1.21389	1.76402	28
33	0.56713	0.82363	0.68857	1.45229	1.21414	1.76328	27
34	0.56736	0.82347	0.68900	1.45139	1.21438	1.76253	26
35	0.56760	0.82330	0.68942	1.45049	1.21462	1.76179	25
36	0.56784	0.82314	0.68985	1.44958	1.21487	1.76105	24
37	0.56808	0.82297	0.69028	1.44868	1.21511	1.76031	23
38	0.56832	0.82281	0.69071	1.44778	1.21535	1.75956	22
39	0.56856	0.82264	0.69114	1.44688	1.21560	1.75882	21
40	0.56880	0.82248	0.69157	1.44598	1.21584	1.75808	20
41	0.56904	0.82231	0.69200	1.44508	1.21609	1.75734	19
42	0.56928	0.82214	0.69243	1.44418	1.21633	1.75661	18
43	0.56952	0.82198	0.69286	1.44329	1.21658	1.75587	17
44	0.56976	0.82181	0.69329	1.44239	1.21682	1.75513	16
45	0.57000	0.82165	0.69372	1.44149	1.21707	1.75440	15
46	0.57024	0.82148	0.69416	1.44060	1.21731	1.75366	14
47	0.57047	0.82132	0.69459	1.43970	1.21756	1.75293	13
48	0.57071	0.82115	0.69502	1.43881	1.21781	1.75219	12
49	0.57095	0.82098	0.69545	1.43792	1.21805	1.75146	11
50	0.57119	0.82082	0.69588	1.43703	1.21830	1.75073	10
51	0.57143	0.82065	0.69631	1.43614	1.21855	1.75000	9
52	0.57167	0.82048	0.69675	1.43525	1.21879	1.74927	8
53	0.57191	0.82032	0.69718	1.43436	1.21904	1.74854	7
54	0.57215	0.82015	0.69761	1.43347	1.21929	1.74781	6
55	0.57238	0.81999	0.69804	1.43258	1.21953	1.74708	5
56	0.57262	0.81982	0.69847	1.43169	1.21978	1.74635	4
57	0.57286	0.81965	0.69891	1.43080	1.22003	1.74562	3
58	0.57310	0.81949	0.69934	1.42992	1.22028	1.74490	2
59	0.57334	0.81932	0.69977	1.42903	1.22053	1.74417	1
60	0.57358	0.81915	0.70021	1.42815	1.22077	1.74345	0
	Cosin.	Sin.	Cotg.	Tang.	Cosec.	Sec.	

	Sin.	Cosin.	Tang.	Cotg.	Sec.	Cosec.	
0	0.57358	0.81915	0.70021	1.42815	1.22077	1.74345	60
1	0.57381	0.81899	0.70064	1.42726	1.22102	1.74272	59
2	0.57405	0.81882	0.70107	1.42638	1.22127	1.74200	58
3	0.57429	0.81865	0.70151	1.42550	1.22152	1.74128	57
4	0.57453	0.81848	0.70194	1.42462	1.22177	1.74056	56
5	0.57477	0.81832	0.70238	1.42374	1.22202	1.73983	55
6	0.57501	0.81815	0.70281	1.42286	1.22227	1.73911	54
7	0.57524	0.81798	0.70325	1.42198	1.22252	1.73840	53
8	0.57548	0.81782	0.70368	1.42110	1.22277	1.73768	52
9	0.57572	0.81765	0.70412	1.42022	1.22302	1.73696	51
10	0.57596	0.81748	0.70455	1.41934	1.22327	1.73624	50
11	0.57619	0.81731	0.70499	1.41847	1.22352	1.73552	49
12	0.57643	0.81714	0.70542	1.41759	1.22377	1.73481	48
13	0.57667	0.81698	0.70586	1.41672	1.22402	1.73409	47
14	0.57691	0.81681	0.70629	1.41584	1.22428	1.73338	46
15	0.57715	0.81664	0.70673	1.41497	1.22453	1.73267	45
16	0.57738	0.81647	0.70717	1.41409	1.22478	1.73195	44
17	0.57762	0.81631	0.70760	1.41322	1.22503	1.73124	43
18	0.57786	0.81614	0.70804	1.41235	1.22528	1.73053	42
19	0.57810	0.81597	0.70848	1.41148	1.22554	1.72982	41
20	0.57833	0.81580	0.70891	1.41061	1.22579	1.72911	40
21	0.57857	0.81563	0.70935	1.40974	1.22604	1.72840	39
22	0.57881	0.81546	0.70979	1.40887	1.22629	1.72769	38
23	0.57904	0.81530	0.71023	1.40800	1.22655	1.72698	37
24	0.57928	0.81513	0.71066	1.40714	1.22680	1.72628	36
25	0.57952	0.81496	0.71110	1.40627	1.22706	1.72557	35
26	0.57976	0.81479	0.71154	1.40540	1.22731	1.72487	34
27	0.57999	0.81462	0.71198	1.40454	1.22756	1.72416	33
28	0.58023	0.81445	0.71242	1.40367	1.22782	1.72346	32
29	0.58047	0.81428	0.71285	1.40281	1.22807	1.72275	31
30	0.58070	0.81412	0.71329	1.40195	1.22833	1.72205	30
31	0.58094	0.81395	0.71373	1.40109	1.22858	1.72135	29
32	0.58118	0.81378	0.71417	1.40022	1.22884	1.72065	28
33	0.58141	0.81361	0.71461	1.39936	1.22909	1.71995	27
34	0.58165	0.81344	0.71505	1.39850	1.22935	1.71925	26
35	0.58189	0.81327	0.71549	1.39764	1.22960	1.71855	25
36	0.58212	0.81310	0.71593	1.39679	1.22986	1.71785	24
37	0.58236	0.81293	0.71637	1.39593	1.23012	1.71715	23
38	0.58260	0.81276	0.71681	1.39507	1.23037	1.71646	22
39	0.58283	0.81259	0.71725	1.39421	1.23063	1.71576	21
40	0.58307	0.81242	0.71769	1.39336	1.23089	1.71506	20
41	0.58330	0.81225	0.71813	1.39250	1.23114	1.71437	19
42	0.58354	0.81208	0.71857	1.39165	1.23140	1.71368	18
43	0.58378	0.81191	0.71901	1.39079	1.23166	1.71298	17
44	0.58401	0.81174	0.71946	1.38994	1.23192	1.71229	16
45	0.58425	0.81157	0.71990	1.38909	1.23217	1.71160	15
46	0.58449	0.81140	0.72034	1.38824	1.23243	1.71091	14
47	0.58472	0.81123	0.72078	1.38738	1.23269	1.71022	13
48	0.58496	0.81106	0.72122	1.38653	1.23295	1.70953	12
49	0.58519	0.81089	0.72167	1.38568	1.23321	1.70884	11
50	0.58543	0.81072	0.72211	1.38484	1.23347	1.70815	10
51	0.58567	0.81055	0.72255	1.38399	1.23373	1.70746	9
52	0.58590	0.81038	0.72299	1.38314	1.23398	1.70677	8
53	0.58614	0.81021	0.72344	1.38229	1.23424	1.70609	7
54	0.58637	0.81004	0.72388	1.38145	1.23450	1.70540	6
55	0.58661	0.80987	0.72432	1.38060	1.23476	1.70472	5
56	0.58684	0.80970	0.72477	1.37976	1.23502	1.70403	4
57	0.58708	0.80953	0.72521	1.37891	1.23529	1.70335	3
58	0.58731	0.80936	0.72565	1.37807	1.23555	1.70267	2
59	0.58755	0.80919	0.72610	1.37722	1.23581	1.70198	1
60	0.58779	0.80902	0.72654	1.37638	1.23607	1.70130	0
	Cosin.	Sin.	Cotg.	Tang.	Cosec.	Sec.	

	Sin.	Cosin.	Tang.	Cotg.	Sec.	Cosec.	
0	0.58779	0.80902	0.72634	1.37638	1.23607	1.70130	60
1	0.58802	0.80885	0.72699	1.37554	1.23633	1.70062	59
2	0.58826	0.80867	0.72743	1.37470	1.23659	1.69994	58
3	0.58849	0.80850	0.72788	1.37386	1.23685	1.69926	57
4	0.58873	0.80833	0.72832	1.37302	1.23711	1.69858	56
5	0.58896	0.80816	0.72877	1.37218	1.23738	1.69790	55
6	0.58920	0.80799	0.72921	1.37134	1.23764	1.69723	54
7	0.58943	0.80782	0.72966	1.37050	1.23790	1.69655	53
8	0.58967	0.80765	0.73010	1.36967	1.23816	1.69587	52
9	0.58990	0.80748	0.73055	1.36883	1.23843	1.69520	51
10	0.59014	0.80730	0.73100	1.36800	1.23869	1.69452	50
11	0.59037	0.80713	0.73144	1.36716	1.23895	1.69385	49
12	0.59061	0.80696	0.73189	1.36633	1.23922	1.69318	48
13	0.59084	0.80679	0.73234	1.36549	1.23948	1.69250	47
14	0.59108	0.80662	0.73278	1.36466	1.23975	1.69183	46
15	0.59131	0.80644	0.73323	1.36383	1.24001	1.69116	45
16	0.59154	0.80627	0.73368	1.36300	1.24028	1.69049	44
17	0.59178	0.80610	0.73413	1.36217	1.24054	1.68982	43
18	0.59201	0.80593	0.73457	1.36134	1.24081	1.68915	42
19	0.59225	0.80576	0.73502	1.36051	1.24107	1.68848	41
20	0.59248	0.80558	0.73547	1.35968	1.24134	1.68782	40
21	0.59272	0.80541	0.73592	1.35885	1.24160	1.68715	39
22	0.59295	0.80524	0.73637	1.35802	1.24187	1.68648	38
23	0.59318	0.80507	0.73681	1.35719	1.24213	1.68582	37
24	0.59342	0.80489	0.73726	1.35637	1.24240	1.68515	36
25	0.59365	0.80472	0.73771	1.35554	1.24267	1.68449	35
26	0.59389	0.80455	0.73816	1.35472	1.24293	1.68382	34
27	0.59412	0.80438	0.73861	1.35389	1.24320	1.68316	33
28	0.59436	0.80420	0.73906	1.35307	1.24347	1.68250	32
29	0.59459	0.80403	0.73951	1.35224	1.24373	1.68183	31
30	0.59482	0.80386	0.73996	1.35142	1.24400	1.68117	30
31	0.59506	0.80368	0.74041	1.35060	1.24427	1.68051	29
32	0.59529	0.80351	0.74086	1.34978	1.24454	1.67985	28
33	0.59552	0.80334	0.74131	1.34896	1.24481	1.67919	27
34	0.59576	0.80316	0.74176	1.34814	1.24508	1.67853	26
35	0.59599	0.80299	0.74221	1.34732	1.24534	1.67788	25
36	0.59622	0.80282	0.74267	1.34650	1.24561	1.67722	24
37	0.59646	0.80264	0.74312	1.34568	1.24588	1.67656	23
38	0.59669	0.80247	0.74357	1.34487	1.24615	1.67591	22
39	0.59693	0.80230	0.74402	1.34405	1.24642	1.67525	21
40	0.59716	0.80212	0.74447	1.34323	1.24669	1.67460	20
41	0.59739	0.80195	0.74492	1.34242	1.24696	1.67394	19
42	0.59763	0.80178	0.74538	1.34160	1.24723	1.67329	18
43	0.59786	0.80160	0.74583	1.34079	1.24750	1.67264	17
44	0.59809	0.80143	0.74628	1.33998	1.24777	1.67198	16
45	0.59832	0.80125	0.74674	1.33916	1.24804	1.67133	15
46	0.59856	0.80108	0.74719	1.33835	1.24832	1.67068	14
47	0.59879	0.80091	0.74764	1.33754	1.24859	1.67003	13
48	0.59902	0.80073	0.74810	1.33673	1.24886	1.66938	12
49	0.59926	0.80055	0.74855	1.33592	1.24913	1.66873	11
50	0.59949	0.80038	0.74900	1.33511	1.24940	1.66809	10
51	0.59972	0.80021	0.74946	1.33430	1.24967	1.66744	9
52	0.59995	0.80003	0.74991	1.33349	1.24995	1.66679	8
53	0.60019	0.79986	0.75037	1.33268	1.25022	1.66615	7
54	0.60042	0.79968	0.75082	1.33187	1.25049	1.66550	6
55	0.60065	0.79951	0.75128	1.33107	1.25077	1.66486	5
56	0.60089	0.79934	0.75173	1.33026	1.25104	1.66421	4
57	0.60112	0.79916	0.75219	1.32946	1.25131	1.66357	3
58	0.60135	0.79899	0.75264	1.32865	1.25159	1.66292	2
59	0.60158	0.79881	0.75310	1.32785	1.25186	1.66228	1
60	0.60182	0.79864	0.75355	1.32704	1.25214	1.66164	0
	Cosin.	Sin.	Cotg.	Tang.	Cosec.	Sec.	

	Sin.	Cosin.	Tang.	Cotg.	Sec.	Cosec.	
0	0.60182	0.79864	0.75355	1.32704	1.25214	1.66164	60
1	0.60205	0.79846	0.75401	1.32624	1.25241	1.66100	59
2	0.60228	0.79829	0.75447	1.32544	1.25266	1.66036	58
3	0.60251	0.79811	0.75492	1.32464	1.25296	1.65972	57
4	0.60274	0.79793	0.75538	1.32384	1.25324	1.65908	56
5	0.60298	0.79776	0.75584	1.32304	1.25351	1.65844	55
6	0.60321	0.79758	0.75629	1.32224	1.25379	1.65780	54
7	0.60344	0.79741	0.75675	1.32144	1.25406	1.65717	53
8	0.60367	0.79723	0.75721	1.32064	1.25434	1.65653	52
9	0.60390	0.79706	0.75767	1.31984	1.25462	1.65589	51
10	0.60414	0.79688	0.75812	1.31904	1.25489	1.65526	50
11	0.60437	0.79671	0.75858	1.31825	1.25517	1.65462	49
12	0.60460	0.79653	0.75904	1.31745	1.25545	1.65399	48
13	0.60483	0.79635	0.75950	1.31666	1.25572	1.65335	47
14	0.60506	0.79618	0.75996	1.31586	1.25600	1.65272	46
15	0.60529	0.79600	0.76042	1.31507	1.25628	1.65209	45
16	0.60553	0.79583	0.76088	1.31427	1.25656	1.65146	44
17	0.60576	0.79565	0.76134	1.31348	1.25683	1.65083	43
18	0.60599	0.79547	0.76180	1.31269	1.25711	1.65020	42
19	0.60622	0.79530	0.76226	1.31190	1.25739	1.64957	41
20	0.60645	0.79512	0.76272	1.31110	1.25767	1.64894	40
21	0.60668	0.79494	0.76318	1.31031	1.25795	1.64831	39
22	0.60691	0.79477	0.76364	1.30952	1.25823	1.64768	38
23	0.60714	0.79459	0.76410	1.30873	1.25851	1.64705	37
24	0.60738	0.79441	0.76456	1.30795	1.25879	1.64643	36
25	0.60761	0.79424	0.76502	1.30716	1.25907	1.64580	35
26	0.60784	0.79406	0.76548	1.30637	1.25935	1.64518	34
27	0.60807	0.79388	0.76594	1.30558	1.25963	1.64455	33
28	0.60830	0.79371	0.76640	1.30480	1.25991	1.64393	32
29	0.60853	0.79353	0.76686	1.30401	1.26019	1.64330	31
30	0.60876	0.79335	0.76733	1.30323	1.26047	1.64268	30
31	0.60899	0.79318	0.76779	1.30244	1.26075	1.64206	29
32	0.60922	0.79300	0.76825	1.30166	1.26104	1.64144	28
33	0.60945	0.79282	0.76871	1.30087	1.26132	1.64081	27
34	0.60968	0.79264	0.76918	1.30009	1.26160	1.64019	26
35	0.60991	0.79247	0.76964	1.29931	1.26188	1.63957	25
36	0.61015	0.79229	0.77010	1.29853	1.26216	1.63895	24
37	0.61038	0.79211	0.77057	1.29775	1.26245	1.63834	23
38	0.61061	0.79193	0.77103	1.29696	1.26273	1.63772	22
39	0.61084	0.79176	0.77149	1.29618	1.26301	1.63710	21
40	0.61107	0.79158	0.77196	1.29541	1.26330	1.63648	20
41	0.61130	0.79140	0.77242	1.29463	1.26358	1.63587	19
42	0.61153	0.79122	0.77289	1.29385	1.26387	1.63525	18
43	0.61176	0.79105	0.77335	1.29307	1.26415	1.63464	17
44	0.61199	0.79087	0.77382	1.29229	1.26443	1.63402	16
45	0.61222	0.79069	0.77428	1.29152	1.26472	1.63341	15
46	0.61245	0.79051	0.77475	1.29074	1.26500	1.63279	14
47	0.61268	0.79033	0.77521	1.28997	1.26529	1.63218	13
48	0.61291	0.79016	0.77568	1.28919	1.26557	1.63157	12
49	0.61314	0.78998	0.77615	1.28842	1.26586	1.63096	11
50	0.61337	0.78980	0.77661	1.28764	1.26615	1.63035	10
51	0.61360	0.78962	0.77708	1.28687	1.26643	1.62974	9
52	0.61383	0.78944	0.77754	1.28610	1.26672	1.62913	8
53	0.61406	0.78926	0.77801	1.28533	1.26701	1.62852	7
54	0.61429	0.78908	0.77848	1.28456	1.26729	1.62791	6
55	0.61451	0.78891	0.77895	1.28379	1.26758	1.62730	5
56	0.61474	0.78873	0.77941	1.28302	1.26787	1.62669	4
57	0.61497	0.78855	0.77988	1.28225	1.26815	1.62609	3
58	0.61520	0.78837	0.78035	1.28148	1.26844	1.62548	2
59	0.61543	0.78819	0.78082	1.28071	1.26873	1.62487	1
60	0.61566	0.78801	0.78129	1.27994	1.26902	1.62427	0
	Cosin.	Sin.	Cotg.	Tang.	Cosec.	Sec.	

	Sin.	Cosin.	Tang.	Cotg.	Sec.	Cosec.	
0	0.61566	0.78801	0.78129	1.27994	1.26902	1.62427	60
1	0.61589	0.78783	0.78175	1.27917	1.26931	1.62366	59
2	0.61612	0.78765	0.78222	1.27841	1.26960	1.62306	58
3	0.61635	0.78747	0.78269	1.27764	1.26988	1.62246	57
4	0.61658	0.78729	0.78316	1.27688	1.27017	1.62185	56
5	0.61681	0.78711	0.78363	1.27611	1.27046	1.62125	55
6	0.61704	0.78694	0.78410	1.27535	1.27075	1.62065	54
7	0.61726	0.78676	0.78457	1.27458	1.27104	1.62005	53
8	0.61749	0.78658	0.78504	1.27382	1.27133	1.61945	52
9	0.61772	0.78640	0.78551	1.27306	1.27162	1.61885	51
10	0.61795	0.78622	0.78598	1.27230	1.27191	1.61825	50
11	0.61818	0.78604	0.78645	1.27153	1.27221	1.61765	49
12	0.61841	0.78586	0.78692	1.27077	1.27250	1.61705	48
13	0.61864	0.78568	0.78739	1.27001	1.27279	1.61646	47
14	0.61887	0.78550	0.78786	1.26925	1.27308	1.61586	46
15	0.61909	0.78532	0.78834	1.26849	1.27337	1.61526	45
16	0.61932	0.78514	0.78881	1.26774	1.27366	1.61467	44
17	0.61955	0.78496	0.78928	1.26698	1.27396	1.61407	43
18	0.61978	0.78478	0.78975	1.26621	1.27425	1.61348	42
19	0.62001	0.78460	0.79022	1.26546	1.27454	1.61288	41
20	0.62024	0.78442	0.79070	1.26471	1.27483	1.61229	40
21	0.62046	0.78424	0.79117	1.26395	1.27513	1.61170	39
22	0.62069	0.78405	0.79164	1.26319	1.27542	1.61111	38
23	0.62092	0.78387	0.79212	1.26244	1.27572	1.61051	37
24	0.62114	0.78369	0.79259	1.26169	1.27601	1.60992	36
25	0.62138	0.78351	0.79306	1.26093	1.27630	1.60933	35
26	0.62160	0.78333	0.79354	1.26018	1.27660	1.60874	34
27	0.62183	0.78315	0.79401	1.25943	1.27689	1.60815	33
28	0.62206	0.78297	0.79449	1.25867	1.27719	1.60756	32
29	0.62229	0.78279	0.79496	1.25792	1.27748	1.60698	31
30	0.62251	0.78261	0.79544	1.25717	1.27778	1.60639	30
31	0.62274	0.78243	0.79591	1.25642	1.27807	1.60580	29
32	0.62297	0.78225	0.79639	1.25567	1.27837	1.60521	28
33	0.62320	0.78206	0.79686	1.25492	1.27867	1.60463	27
34	0.62342	0.78188	0.79734	1.25417	1.27896	1.60404	26
35	0.62365	0.78170	0.79781	1.25343	1.27926	1.60346	25
36	0.62388	0.78152	0.79829	1.25268	1.27956	1.60287	24
37	0.62411	0.78134	0.79877	1.25193	1.27985	1.60229	23
38	0.62433	0.78116	0.79924	1.25118	1.28015	1.60171	22
39	0.62456	0.78098	0.79972	1.25044	1.28045	1.60112	21
40	0.62479	0.78079	0.80020	1.24969	1.28075	1.60054	20
41	0.62502	0.78061	0.80067	1.24895	1.28105	1.59996	19
42	0.62524	0.78043	0.80115	1.24820	1.28134	1.59938	18
43	0.62547	0.78025	0.80163	1.24746	1.28164	1.59880	17
44	0.62570	0.78007	0.80211	1.24672	1.28194	1.59822	16
45	0.62592	0.77988	0.80258	1.24597	1.28224	1.59764	15
46	0.62615	0.77970	0.80306	1.24523	1.28254	1.59706	14
47	0.62638	0.77952	0.80354	1.24449	1.28284	1.59648	13
48	0.62660	0.77934	0.80402	1.24375	1.28314	1.59590	12
49	0.62683	0.77916	0.80450	1.24301	1.28344	1.59533	11
50	0.62706	0.77897	0.80498	1.24227	1.28374	1.59475	10
51	0.62728	0.77879	0.80546	1.24153	1.28404	1.59418	9
52	0.62751	0.77861	0.80594	1.24079	1.28434	1.59360	8
53	0.62774	0.77843	0.80642	1.24005	1.28464	1.59302	7
54	0.62796	0.77824	0.80690	1.23931	1.28495	1.59245	6
55	0.62819	0.77806	0.80738	1.23858	1.28525	1.59188	5
56	0.62842	0.77788	0.80786	1.23784	1.28555	1.59130	4
57	0.62864	0.77769	0.80834	1.23710	1.28585	1.59073	3
58	0.62887	0.77751	0.80882	1.23637	1.28615	1.59016	2
59	0.62909	0.77733	0.80930	1.23563	1.28646	1.58959	1
60	0.62932	0.77715	0.80978	1.23490	1.28676	1.58902	0
^	Cosin.	Sin.	Cotg.	Tang.	Cosec.	Sec.	'

	Sin.	Cosin.	Tang.	Cotg.	Sec.	Cosec.	
0	0.62932	0.77715	0.80978	1.23490	1.28676	1.58902	60
1	0.62955	0.77696	0.81027	1.23416	1.28706	1.58845	59
2	0.62977	0.77678	0.81075	1.23343	1.28737	1.58788	58
3	0.63000	0.77660	0.81123	1.23270	1.28767	1.58731	57
4	0.63022	0.77641	0.81171	1.23196	1.28797	1.58674	56
5	0.63045	0.77623	0.81220	1.23123	1.28828	1.58617	55
6	0.63068	0.77605	0.81268	1.23050	1.28858	1.58560	54
7	0.63090	0.77586	0.81316	1.22977	1.28889	1.58503	53
8	0.63113	0.77568	0.81364	1.22904	1.28919	1.58447	52
9	0.63135	0.77550	0.81413	1.22831	1.28950	1.58390	51
10	0.63158	0.77531	0.81461	1.22758	1.28980	1.58333	50
11	0.63180	0.77513	0.81510	1.22685	1.29011	1.58277	49
12	0.63203	0.77494	0.81558	1.22612	1.29042	1.58221	48
13	0.63225	0.77476	0.81606	1.22539	1.29072	1.58164	47
14	0.63248	0.77458	0.81655	1.22467	1.29103	1.58108	46
15	0.63271	0.77439	0.81703	1.22394	1.29133	1.58051	45
16	0.63293	0.77421	0.81752	1.22321	1.29164	1.57995	44
17	0.63316	0.77402	0.81800	1.22249	1.29195	1.57939	43
18	0.63338	0.77384	0.81849	1.22176	1.29226	1.57883	42
19	0.63361	0.77366	0.81898	1.22104	1.29256	1.57827	41
20	0.63383	0.77347	0.81946	1.22031	1.29287	1.57771	40
21	0.63406	0.77329	0.81995	1.21959	1.29318	1.57715	39
22	0.63428	0.77310	0.82044	1.21887	1.29349	1.57659	38
23	0.63451	0.77292	0.82092	1.21814	1.29380	1.57603	37
24	0.63473	0.77273	0.82141	1.21742	1.29411	1.57547	36
25	0.63496	0.77255	0.82190	1.21670	1.29442	1.57491	35
26	0.63518	0.77236	0.82238	1.21598	1.29473	1.57436	34
27	0.63540	0.77218	0.82287	1.21526	1.29504	1.57380	33
28	0.63563	0.77199	0.82336	1.21454	1.29535	1.57324	32
29	0.63585	0.77181	0.82385	1.21382	1.29566	1.57269	31
30	0.63608	0.77162	0.82434	1.21310	1.29597	1.57213	30
31	0.63630	0.77144	0.82483	1.21238	1.29628	1.57158	29
32	0.63653	0.77125	0.82531	1.21166	1.29659	1.57103	28
33	0.63675	0.77107	0.82580	1.21094	1.29690	1.57047	27
34	0.63698	0.77088	0.82629	1.21023	1.29721	1.56992	26
35	0.63720	0.77070	0.82678	1.20951	1.29752	1.56937	25
36	0.63742	0.77051	0.82727	1.20879	1.29784	1.56881	24
37	0.63765	0.77033	0.82776	1.20808	1.29815	1.56826	23
38	0.63787	0.77014	0.82825	1.20736	1.29846	1.56771	22
39	0.63810	0.76996	0.82874	1.20665	1.29877	1.56716	21
40	0.63832	0.76977	0.82923	1.20593	1.29909	1.56661	20
41	0.63854	0.76959	0.82972	1.20522	1.29940	1.56606	19
42	0.63877	0.76940	0.83022	1.20451	1.29971	1.56551	18
43	0.63899	0.76921	0.83071	1.20379	1.30003	1.56497	17
44	0.63922	0.76903	0.83120	1.20308	1.30034	1.56442	16
45	0.63944	0.76884	0.83169	1.20237	1.30066	1.56387	15
46	0.63966	0.76866	0.83218	1.20166	1.30097	1.56332	14
47	0.63989	0.76847	0.83268	1.20095	1.30129	1.56278	13
48	0.64011	0.76828	0.83317	1.20024	1.30160	1.56223	12
49	0.64033	0.76810	0.83366	1.19953	1.30192	1.56169	11
50	0.64056	0.76791	0.83415	1.19882	1.30223	1.56114	10
51	0.64078	0.76772	0.83465	1.19811	1.30255	1.56060	9
52	0.64100	0.76754	0.83514	1.19740	1.30287	1.56005	8
53	0.64123	0.76735	0.83564	1.19669	1.30318	1.55951	7
54	0.64145	0.76717	0.83613	1.19599	1.30350	1.55897	6
55	0.64167	0.76698	0.83662	1.19528	1.30382	1.55843	5
56	0.64190	0.76679	0.83712	1.19457	1.30413	1.55789	4
57	0.64212	0.76661	0.83761	1.19387	1.30445	1.55734	3
58	0.64234	0.76642	0.83811	1.19316	1.30477	1.55680	2
59	0.64256	0.76623	0.83860	1.19246	1.30509	1.55626	1
60	0.64279	0.76604	0.83910	1.19175	1.30541	1.55572	0
	Cosin.	Sin.	Cotg.	Tang.	Cosec.	Sec.	

	Sin.	Cosin.	Tang.	Cotg.	Sec.	Cosec.	
1	0.64279	0.76604	0.83910	1.19175	1.30541	1.55572	60
0	0.64301	0.76586	0.83960	1.19105	1.30573	1.55518	59
2	0.64323	0.76567	0.84009	1.19035	1.30605	1.55465	58
3	0.64346	0.76548	0.84059	1.18964	1.30636	1.55411	57
4	0.64368	0.76530	0.84108	1.18894	1.30668	1.55357	56
5	0.64390	0.76511	0.84158	1.18824	1.30700	1.55303	55
6	0.64412	0.76492	0.84208	1.18754	1.30732	1.55250	54
7	0.64435	0.76473	0.84258	1.18684	1.30764	1.55196	53
8	0.64457	0.76455	0.84307	1.18614	1.30796	1.55143	52
9	0.64479	0.76436	0.84357	1.18544	1.30829	1.55089	51
10	0.64501	0.76417	0.84407	1.18474	1.30861	1.55035	50
11	0.64524	0.76398	0.84457	1.18404	1.30893	1.54982	49
12	0.64546	0.76380	0.84507	1.18334	1.30925	1.54929	48
13	0.64568	0.76361	0.84556	1.18264	1.30957	1.54876	47
14	0.64590	0.76342	0.84606	1.18194	1.30989	1.54822	46
15	0.64612	0.76323	0.84656	1.18125	1.31022	1.54769	45
16	0.64635	0.76304	0.84706	1.18055	1.31054	1.54716	44
17	0.64657	0.76286	0.84756	1.17986	1.31086	1.54663	43
18	0.64679	0.76267	0.84806	1.17916	1.31119	1.54610	42
19	0.64701	0.76248	0.84856	1.17846	1.31151	1.54557	41
20	0.64723	0.76229	0.84906	1.17777	1.31183	1.54504	40
21	0.64746	0.76210	0.84956	1.17708	1.31216	1.54451	39
22	0.64768	0.76192	0.85006	1.17638	1.31248	1.54398	38
23	0.64790	0.76173	0.85057	1.17569	1.31281	1.54345	37
24	0.64812	0.76154	0.85107	1.17500	1.31313	1.54292	36
25	0.64834	0.76135	0.85157	1.17430	1.31346	1.54240	35
26	0.64856	0.76116	0.85207	1.17361	1.31378	1.54187	34
27	0.64878	0.76097	0.85257	1.17292	1.31411	1.54134	33
28	0.64901	0.76078	0.85308	1.17223	1.31443	1.54082	32
29	0.64923	0.76059	0.85358	1.17154	1.31476	1.54029	31
30	0.64945	0.76041	0.85408	1.17085	1.31509	1.53977	30
31	0.64967	0.76022	0.85458	1.17016	1.31541	1.53924	29
32	0.64989	0.76003	0.85509	1.16947	1.31574	1.53872	28
33	0.65011	0.75984	0.85559	1.16878	1.31607	1.53820	27
34	0.65033	0.75965	0.85609	1.16809	1.31640	1.53768	26
35	0.65055	0.75946	0.85660	1.16741	1.31672	1.53715	25
36	0.65077	0.75927	0.85710	1.16672	1.31705	1.53663	24
37	0.65100	0.75908	0.85761	1.16603	1.31738	1.53611	23
38	0.65122	0.75889	0.85811	1.16535	1.31771	1.53559	22
39	0.65144	0.75870	0.85862	1.16466	1.31804	1.53507	21
40	0.65166	0.75851	0.85912	1.16398	1.31837	1.53455	20
41	0.65188	0.75832	0.85963	1.16329	1.31870	1.53403	19
42	0.65210	0.75813	0.86014	1.16261	1.31903	1.53351	18
43	0.65232	0.75794	0.86064	1.16192	1.31936	1.53299	17
44	0.65254	0.75775	0.86115	1.16124	1.31969	1.53247	16
45	0.65276	0.75756	0.86166	1.16056	1.32002	1.53196	15
46	0.65298	0.75738	0.86216	1.15987	1.32035	1.53144	14
47	0.65320	0.75719	0.86267	1.15919	1.32068	1.53092	13
48	0.65342	0.75700	0.86318	1.15851	1.32101	1.53041	12
49	0.65364	0.75680	0.86368	1.15783	1.32134	1.52989	11
50	0.65386	0.75661	0.86419	1.15715	1.32168	1.52938	10
51	0.65408	0.75642	0.86470	1.15647	1.32201	1.52886	9
52	0.65430	0.75623	0.86521	1.15579	1.32234	1.52835	8
53	0.65452	0.75604	0.86572	1.15511	1.32267	1.52784	7
54	0.65474	0.75585	0.86623	1.15443	1.32301	1.52732	6
55	0.65496	0.75566	0.86674	1.15375	1.32334	1.52681	5
56	0.65518	0.75547	0.86725	1.15308	1.32368	1.52630	4
57	0.65540	0.75528	0.86776	1.15240	1.32401	1.52579	3
58	0.65562	0.75509	0.86827	1.15172	1.32434	1.52527	2
59	0.65584	0.75490	0.86878	1.15104	1.32468	1.52476	1
60	0.65606	0.75471	0.86929	1.15037	1.32501	1.52425	0
	Cosin.	Sin.	Cotg.	Tang.	Cosec.	Sec.	

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	Sin.	Cosin.	Tang.	Cotg.	Sec.	Cosec.	
0	0.65606	0.75471	0.86929	1.15037	1.32501	1.52425	60
1	0.65628	0.75452	0.86980	1.14969	1.32535	1.52374	59
2	0.65650	0.75433	0.87031	1.14902	1.32568	1.52323	58
3	0.65672	0.75414	0.87082	1.14834	1.32602	1.52273	57
4	0.65694	0.75395	0.87133	1.14767	1.32636	1.52222	56
5	0.65716	0.75375	0.87184	1.14699	1.32669	1.52171	55
6	0.65738	0.75356	0.87236	1.14632	1.32703	1.52120	54
7	0.65759	0.75337	0.87287	1.14565	1.32737	1.52069	53
8	0.65781	0.75318	0.87338	1.14498	1.32770	1.52019	52
9	0.65803	0.75299	0.87389	1.14430	1.32804	1.51968	51
10	0.65825	0.75280	0.87441	1.14363	1.32838	1.51918	50
11	0.65847	0.75261	0.87492	1.14296	1.32872	1.51867	49
12	0.65869	0.75241	0.87543	1.14229	1.32905	1.51817	48
13	0.65891	0.75222	0.87595	1.14162	1.32939	1.51766	47
14	0.65913	0.75203	0.87646	1.14095	1.32973	1.51716	46
15	0.65935	0.75184	0.87698	1.14028	1.33007	1.51665	45
16	0.65956	0.75165	0.87749	1.13961	1.33041	1.51615	44
17	0.65978	0.75146	0.87801	1.13894	1.33075	1.51565	43
18	0.66000	0.75126	0.87852	1.13828	1.33109	1.51515	42
19	0.66022	0.75107	0.87904	1.13761	1.33143	1.51465	41
20	0.66044	0.75088	0.87955	1.13694	1.33177	1.51415	40
21	0.66066	0.75069	0.88007	1.13627	1.33211	1.51364	39
22	0.66088	0.75050	0.88059	1.13561	1.33245	1.51314	38
23	0.66109	0.75030	0.88110	1.13494	1.33279	1.51265	37
24	0.66131	0.75011	0.88162	1.13428	1.33314	1.51215	36
25	0.66153	0.74992	0.88214	1.13361	1.33348	1.51165	35
26	0.66175	0.74973	0.88265	1.13295	1.33382	1.51115	34
27	0.66197	0.74953	0.88317	1.13228	1.33416	1.51065	33
28	0.66218	0.74934	0.88369	1.13162	1.33451	1.51015	32
29	0.66240	0.74915	0.88421	1.13096	1.33485	1.50966	31
30	0.66262	0.74896	0.88473	1.13029	1.33519	1.50916	30
31	0.66284	0.74876	0.88524	1.12963	1.33554	1.50866	29
32	0.66306	0.74857	0.88576	1.12897	1.33588	1.50817	28
33	0.66327	0.74838	0.88628	1.12831	1.33622	1.50767	27
34	0.66349	0.74818	0.88680	1.12765	1.33657	1.50718	26
35	0.66371	0.74799	0.88732	1.12699	1.33691	1.50669	25
36	0.66393	0.74780	0.88784	1.12633	1.33726	1.50619	24
37	0.66414	0.74760	0.88837	1.12567	1.33760	1.50570	23
38	0.66436	0.74741	0.88888	1.12501	1.33795	1.50521	22
39	0.66458	0.74722	0.88940	1.12435	1.33830	1.50471	21
40	0.66480	0.74703	0.88992	1.12369	1.33864	1.50422	20
41	0.66501	0.74683	0.89045	1.12303	1.33899	1.50373	19
42	0.66523	0.74664	0.89097	1.12238	1.33934	1.50324	18
43	0.66545	0.74644	0.89149	1.12172	1.33968	1.50275	17
44	0.66566	0.74625	0.89201	1.12106	1.34003	1.50226	16
45	0.66588	0.74606	0.89253	1.12041	1.34038	1.50177	15
46	0.66610	0.74586	0.89306	1.11975	1.34073	1.50128	14
47	0.66632	0.74567	0.89358	1.11909	1.34108	1.50079	13
48	0.66653	0.74548	0.89410	1.11844	1.34142	1.50030	12
49	0.66675	0.74528	0.89463	1.11778	1.34177	1.49981	11
50	0.66697	0.74509	0.89515	1.11713	1.34212	1.49933	10
51	0.66718	0.74489	0.89567	1.11648	1.34247	1.49884	9
52	0.66740	0.74470	0.89620	1.11582	1.34282	1.49835	8
53	0.66762	0.74451	0.89672	1.11517	1.34317	1.49787	7
54	0.66783	0.74431	0.89725	1.11452	1.34352	1.49738	6
55	0.66805	0.74412	0.89777	1.11387	1.34387	1.49690	5
56	0.66827	0.74392	0.89830	1.11321	1.34423	1.49641	4
57	0.66848	0.74373	0.89883	1.11256	1.34458	1.49593	3
58	0.66870	0.74353	0.89935	1.11191	1.34493	1.49544	2
59	0.66891	0.74334	0.89988	1.11126	1.34528	1.49496	1
60	0.66913	0.74314	0.90040	1.11061	1.34563	1.49448	0
	Cosin.	Sin.	Cotg.	Tang.	Cosec.	Sec.	

	Sin.	Cosin.	Tang.	Cotg.	Sec.	Cosec.	
0	0.66913	0.74314	0.90040	1.11061	1.34563	1.49448	60
1	0.66935	0.74295	0.90093	1.10996	1.34599	1.49399	59
2	0.66956	0.74276	0.90146	1.10931	1.34634	1.49351	58
3	0.66978	0.74256	0.90199	1.10867	1.34669	1.49303	57
4	0.66999	0.74237	0.90251	1.10802	1.34704	1.49255	56
5	0.67021	0.74217	0.90304	1.10737	1.34740	1.49207	55
6	0.67043	0.74198	0.90357	1.10672	1.34775	1.49159	54
7	0.67064	0.74178	0.90410	1.10607	1.34811	1.49111	53
8	0.67086	0.74159	0.90463	1.10543	1.34846	1.49063	52
9	0.67107	0.74139	0.90516	1.10478	1.34882	1.49015	51
10	0.67129	0.74120	0.90569	1.10414	1.34917	1.48967	50
11	0.67151	0.74100	0.90621	1.10349	1.34953	1.48919	49
12	0.67172	0.74080	0.90674	1.10285	1.34988	1.48871	48
13	0.67194	0.74061	0.90727	1.10220	1.35024	1.48824	47
14	0.67215	0.74041	0.90781	1.10156	1.35060	1.48776	46
15	0.67237	0.74022	0.90834	1.10091	1.35095	1.48728	45
16	0.67258	0.74002	0.90887	1.10027	1.35131	1.48681	44
17	0.67280	0.73983	0.90940	1.09963	1.35167	1.48633	43
18	0.67301	0.73963	0.90993	1.09899	1.35203	1.48586	42
19	0.67323	0.73944	0.91046	1.09834	1.35238	1.48538	41
20	0.67344	0.73924	0.91099	1.09770	1.35274	1.48491	40
21	0.67366	0.73904	0.91153	1.09706	1.35310	1.48443	39
22	0.67387	0.73885	0.91206	1.09642	1.35346	1.48396	38
23	0.67409	0.73865	0.91259	1.09578	1.35382	1.48349	37
24	0.67430	0.73846	0.91313	1.09514	1.35418	1.48301	36
25	0.67452	0.73826	0.91366	1.09450	1.35454	1.48254	35
26	0.67473	0.73806	0.91419	1.09386	1.35490	1.48207	34
27	0.67495	0.73787	0.91473	1.09322	1.35526	1.48160	33
28	0.67516	0.73767	0.91526	1.09258	1.35562	1.48113	32
29	0.67538	0.73747	0.91580	1.09195	1.35598	1.48066	31
30	0.67559	0.73728	0.91633	1.09131	1.35634	1.48019	30
31	0.67580	0.73708	0.91687	1.09067	1.35670	1.47972	29
32	0.67602	0.73688	0.91740	1.09003	1.35707	1.47925	28
33	0.67623	0.73669	0.91794	1.08940	1.35743	1.47878	27
34	0.67645	0.73649	0.91847	1.08876	1.35779	1.47831	26
35	0.67666	0.73629	0.91901	1.08813	1.35815	1.47784	25
36	0.67688	0.73610	0.91955	1.08749	1.35852	1.47738	24
37	0.67709	0.73590	0.92008	1.08686	1.35888	1.47691	23
38	0.67730	0.73570	0.92062	1.08622	1.35924	1.47644	22
39	0.67752	0.73551	0.92116	1.08559	1.35961	1.47598	21
40	0.67773	0.73531	0.92170	1.08496	1.35997	1.47551	20
41	0.67795	0.73511	0.92223	1.08432	1.36034	1.47504	19
42	0.67816	0.73491	0.92277	1.08369	1.36070	1.47458	18
43	0.67837	0.73472	0.92331	1.08306	1.36107	1.47411	17
44	0.67859	0.73452	0.92385	1.08243	1.36143	1.47365	16
45	0.67880	0.73432	0.92439	1.08179	1.36180	1.47319	15
46	0.67901	0.73413	0.92493	1.08116	1.36217	1.47272	14
47	0.67923	0.73393	0.92547	1.08053	1.36253	1.47226	13
48	0.67944	0.73373	0.92601	1.07990	1.36290	1.47180	12
49	0.67965	0.73353	0.92655	1.07927	1.36327	1.47134	11
50	0.67987	0.73333	0.92709	1.07864	1.36363	1.47087	10
51	0.68008	0.73314	0.92763	1.07801	1.36400	1.47041	9
52	0.68029	0.73294	0.92817	1.07738	1.36437	1.46995	8
53	0.68051	0.73274	0.92872	1.07676	1.36474	1.46949	7
54	0.68072	0.73254	0.92926	1.07613	1.36511	1.46903	6
55	0.68093	0.73234	0.92980	1.07550	1.36548	1.46857	5
56	0.68115	0.73215	0.93034	1.07487	1.36585	1.46811	4
57	0.68136	0.73195	0.93088	1.07425	1.36622	1.46765	3
58	0.68157	0.73175	0.93143	1.07362	1.36659	1.46719	2
59	0.68179	0.73155	0.93197	1.07299	1.36696	1.46674	1
60	0.68200	0.73135	0.93252	1.07237	1.36733	1.46628	0
	Cosin.	Sin.	Cotg.	Tang.	Cosec.	Sec.	

	Sin.	Cosin.	Tang.	Cotg.	Sec.	Cosec.	
0	0.68200	0.73135	0.93252	1.07237	1.36733	1.46628	60
1	0.68221	0.73116	0.93306	1.07174	1.36770	1.46582	59
2	0.68242	0.73096	0.93360	1.07112	1.36807	1.46537	58
3	0.68264	0.73076	0.93415	1.07049	1.36844	1.46491	57
4	0.68285	0.73056	0.93469	1.06987	1.36881	1.46445	56
5	0.68306	0.73036	0.93524	1.06925	1.36919	1.46400	55
6	0.68327	0.73016	0.93578	1.06862	1.36956	1.46354	54
7	0.68349	0.72996	0.93633	1.06800	1.36993	1.46309	53
8	0.68370	0.72976	0.93688	1.06738	1.37030	1.46263	52
9	0.68391	0.72957	0.93742	1.06676	1.37068	1.46218	51
10	0.68412	0.72937	0.93797	1.06613	1.37105	1.46173	50
11	0.68434	0.72917	0.93852	1.06551	1.37143	1.46127	49
12	0.68455	0.72897	0.93906	1.06489	1.37180	1.46082	48
13	0.68476	0.72877	0.93961	1.06427	1.37218	1.46037	47
14	0.68497	0.72857	0.94016	1.06365	1.37255	1.45992	46
15	0.68518	0.72837	0.94071	1.06303	1.37293	1.45946	45
16	0.68539	0.72817	0.94125	1.06241	1.37330	1.45901	44
17	0.68561	0.72797	0.94180	1.06179	1.37368	1.45856	43
18	0.68582	0.72777	0.94235	1.06117	1.37406	1.45811	42
19	0.68603	0.72757	0.94290	1.06056	1.37443	1.45766	41
20	0.68624	0.72737	0.94345	1.05994	1.37481	1.45721	40
21	0.68645	0.72717	0.94400	1.05932	1.37519	1.45676	39
22	0.68666	0.72697	0.94455	1.05870	1.37556	1.45631	38
23	0.68688	0.72677	0.94510	1.05809	1.37594	1.45587	37
24	0.68709	0.72657	0.94565	1.05747	1.37632	1.45542	36
25	0.68730	0.72637	0.94620	1.05685	1.37670	1.45497	35
26	0.68751	0.72617	0.94676	1.05624	1.37708	1.45452	34
27	0.68772	0.72597	0.94731	1.05562	1.37746	1.45408	33
28	0.68793	0.72577	0.94786	1.05501	1.37784	1.45363	32
29	0.68814	0.72557	0.94841	1.05439	1.37822	1.45319	31
30	0.68835	0.72537	0.94896	1.05378	1.37860	1.45274	30
31	0.68857	0.72517	0.94952	1.05317	1.37898	1.45229	29
32	0.68878	0.72497	0.95007	1.05255	1.37936	1.45185	28
33	0.68899	0.72477	0.95062	1.05194	1.37974	1.45141	27
34	0.68920	0.72457	0.95118	1.05133	1.38012	1.45096	26
35	0.68941	0.72437	0.95173	1.05072	1.38051	1.45052	25
36	0.68962	0.72417	0.95229	1.05010	1.38089	1.45007	24
37	0.68983	0.72397	0.95284	1.04949	1.38127	1.44963	23
38	0.69004	0.72377	0.95340	1.04888	1.38165	1.44919	22
39	0.69025	0.72357	0.95395	1.04827	1.38204	1.44875	21
40	0.69046	0.72337	0.95451	1.04766	1.38242	1.44831	20
41	0.69067	0.72317	0.95506	1.04705	1.38280	1.44787	19
42	0.69088	0.72297	0.95562	1.04644	1.38319	1.44742	18
43	0.69109	0.72277	0.95618	1.04583	1.38357	1.44698	17
44	0.69130	0.72257	0.95673	1.04522	1.38396	1.44654	16
45	0.69151	0.72236	0.95729	1.04461	1.38434	1.44610	15
46	0.69172	0.72216	0.95785	1.04401	1.38473	1.44567	14
47	0.69193	0.72196	0.95841	1.04340	1.38512	1.44523	13
48	0.69214	0.72176	0.95897	1.04279	1.38550	1.44479	12
49	0.69235	0.72156	0.95952	1.04218	1.38589	1.44435	11
50	0.69256	0.72136	0.96008	1.04158	1.38628	1.44391	10
51	0.69277	0.72116	0.96064	1.04097	1.38666	1.44347	9
52	0.69298	0.72095	0.96120	1.04036	1.38705	1.44304	8
53	0.69319	0.72075	0.96176	1.03976	1.38744	1.44260	7
54	0.69340	0.72055	0.96232	1.03915	1.38783	1.44217	6
55	0.69361	0.72035	0.96288	1.03855	1.38822	1.44173	5
56	0.69382	0.72015	0.96344	1.03794	1.38860	1.44129	4
57	0.69403	0.71995	0.96400	1.03734	1.38899	1.44086	3
58	0.69424	0.71974	0.96457	1.03674	1.38938	1.44042	2
59	0.69445	0.71954	0.96513	1.03613	1.38977	1.43999	1
60	0.69466	0.71934	0.96569	1.03553	1.39016	1.43956	0
	Cosin.	Sin.	Cotg.	Tang.	Cosec.	Sec.	

	Sin.	Cosin.	Tang.	Cotg.	Sec.	Cosec.	
0	0.69466	0.71934	0.96569	1.03553	1.39016	1.43956	60
1	0.69487	0.71914	0.96625	1.03493	1.39055	1.43912	59
2	0.69508	0.71894	0.96681	1.03433	1.39095	1.43869	58
3	0.69529	0.71873	0.96738	1.03372	1.39134	1.43826	57
4	0.69549	0.71853	0.96794	1.03312	1.39173	1.43783	56
5	0.69570	0.71833	0.96850	1.03252	1.39212	1.43739	55
6	0.69591	0.71813	0.96907	1.03192	1.39251	1.43696	54
7	0.69612	0.71792	0.96963	1.03132	1.39291	1.43653	53
8	0.69633	0.71772	0.97020	1.03072	1.39330	1.43610	52
9	0.69654	0.71752	0.97076	1.03012	1.39369	1.43567	51
10	0.69675	0.71732	0.97133	1.02952	1.39409	1.43524	50
11	0.69696	0.71711	0.97189	1.02892	1.39448	1.43481	49
12	0.69717	0.71691	0.97246	1.02832	1.39487	1.43438	48
13	0.69737	0.71671	0.97302	1.02772	1.39527	1.43395	47
14	0.69758	0.71650	0.97359	1.02713	1.39566	1.43352	46
15	0.69779	0.71630	0.97416	1.02653	1.39606	1.43309	45
16	0.69800	0.71610	0.97472	1.02593	1.39646	1.43267	44
17	0.69821	0.71590	0.97529	1.02533	1.39685	1.43224	43
18	0.69842	0.71569	0.97586	1.02474	1.39725	1.43181	42
19	0.69862	0.71549	0.97643	1.02414	1.39764	1.43139	41
20	0.69883	0.71529	0.97700	1.02355	1.39804	1.43096	40
21	0.69904	0.71508	0.97756	1.02295	1.39844	1.43053	39
22	0.69925	0.71488	0.97813	1.02236	1.39884	1.43011	38
23	0.69946	0.71468	0.97870	1.02176	1.39924	1.42968	37
24	0.69966	0.71447	0.97927	1.02117	1.39963	1.42926	36
25	0.69987	0.71427	0.97984	1.02057	1.40003	1.42883	35
26	0.70008	0.71407	0.98041	1.01998	1.40043	1.42841	34
27	0.70029	0.71386	0.98098	1.01939	1.40083	1.42799	33
28	0.70049	0.71366	0.98155	1.01879	1.40123	1.42756	32
29	0.70070	0.71345	0.98213	1.01820	1.40163	1.42714	31
30	0.70091	0.71325	0.98270	1.01761	1.40203	1.42672	30
31	0.70112	0.71305	0.98327	1.01702	1.40243	1.42630	29
32	0.70132	0.71284	0.98384	1.01642	1.40283	1.42587	28
33	0.70153	0.71264	0.98441	1.01583	1.40324	1.42545	27
34	0.70174	0.71243	0.98499	1.01524	1.40364	1.42503	26
35	0.70195	0.71223	0.98556	1.01465	1.40404	1.42461	25
36	0.70215	0.71203	0.98613	1.01406	1.40444	1.42419	24
37	0.70236	0.71182	0.98671	1.01347	1.40485	1.42377	23
38	0.70257	0.71162	0.98728	1.01288	1.40525	1.42335	22
39	0.70277	0.71141	0.98786	1.01229	1.40565	1.42293	21
40	0.70298	0.71121	0.98843	1.01170	1.40606	1.42251	20
41	0.70319	0.71100	0.98901	1.01112	1.40646	1.42210	19
42	0.70339	0.71080	0.98958	1.01053	1.40687	1.42168	18
43	0.70360	0.71059	0.99016	1.00994	1.40727	1.42126	17
44	0.70381	0.71039	0.99073	1.00935	1.40768	1.42084	16
45	0.70401	0.71019	0.99131	1.00876	1.40808	1.42042	15
46	0.70422	0.70998	0.99189	1.00818	1.40849	1.42001	14
47	0.70443	0.70978	0.99247	1.00759	1.40890	1.41959	13
48	0.70463	0.70957	0.99304	1.00701	1.40930	1.41918	12
49	0.70484	0.70937	0.99362	1.00642	1.40971	1.41876	11
50	0.70505	0.70916	0.99420	1.00583	1.41012	1.41835	10
51	0.70525	0.70896	0.99478	1.00525	1.41053	1.41793	9
52	0.70546	0.70875	0.99536	1.00467	1.41093	1.41752	8
53	0.70567	0.70855	0.99594	1.00408	1.41134	1.41710	7
54	0.70587	0.70834	0.99652	1.00350	1.41175	1.41669	6
55	0.70608	0.70813	0.99710	1.00291	1.41216	1.41627	5
56	0.70628	0.70793	0.99768	1.00233	1.41257	1.41586	4
57	0.70649	0.70772	0.99826	1.00175	1.41298	1.41545	3
58	0.70670	0.70752	0.99884	1.00116	1.41339	1.41504	2
59	0.70690	0.70731	0.99942	1.00058	1.41380	1.41463	1
60	0.70711	0.70711	1.00000	1.00000	1.41421	1.41421	0
	Cosin.	Sin.	Cotg.	Tang.	Cosec.	Sec.	

N.	N ²	N.	N ²	N.	N ²
1	1	34	1156	67	4489
2	4	35	1225	68	4624
3	9	36	1296	69	4761
4	16	37	1369	70	4900
5	25	38	1444	71	5041
6	36	39	1521	72	5184
7	49	40	1600	73	5329
8	64	41	1681	74	5476
9	81	42	1764	75	5625
10	100	43	1849	76	5776
11	121	44	1936	77	5929
12	144	45	2025	78	6084
13	169	46	2116	79	6241
14	196	47	2209	80	6400
15	225	48	2304	81	6561
16	256	49	2401	82	6724
17	289	50	2500	83	6889
18	324	51	2601	84	7056
19	361	52	2704	85	7225
20	400	53	2809	86	7396
21	441	54	2916	87	7569
22	484	55	3025	88	7744
23	529	56	3136	89	7921
24	576	57	3249	90	8100
25	625	58	3364	91	8281
26	676	59	3481	92	8464
27	729	60	3600	93	8649
28	784	61	3721	94	8836
29	841	62	3844	95	9025
30	900	63	3969	96	9216
31	961	64	4096	97	9409
32	1024	65	4225	98	9604
33	1089	66	4356	99	9801

N.	N ²	0	1	2	3	4	5	6	7	8	9
100	10	0000	0200	0400	0600	0801	1002	1203	1404	1606	1808
101		2010	2212	2414	2616	2819	3022	3225	3428	3632	3836
102		4040	4244	4448	4652	4857	5062	5267	5472	5678	5884
103		6090	6296	6502	6708	6915	7122	7329	7536	7744	7952
104		8160	8368	8576	8784	8993	9202	9411	9620	9830	*040
105	11	0250	0460	0670	0880	1091	1302	1513	1724	1936	2148
106		2360	2572	2784	2996	3209	3422	3635	3848	4062	4276
107		4490	4704	4918	5132	5347	5562	5777	5992	6208	6424
108		6640	6856	7072	7288	7505	7722	7939	8156	8374	8592
109		8810	9028	9246	9464	9683	9902	*0121	*0340	*0560	*0780
110	12	1000	1220	1440	1660	1881	2102	2323	2544	2766	2988
111		3210	3432	3654	3876	4099	4322	4545	4768	4992	5216
112		5440	5664	5888	6112	6337	6562	6787	7012	7238	7464
113		7690	7916	8142	8368	8595	8822	9049	9276	9504	9732
114		9960	*0188	*0416	*0644	*0873	*1102	*1331	*1560	*1790	*2020
115	13	2250	2480	2710	2940	3171	3402	3633	3864	4096	4328
116		4560	4792	5024	5256	5489	5722	5955	6188	6422	6656
117		6890	7124	7358	7592	7827	8062	8297	8532	8768	9004
118		9240	9476	9712	9948	*0185	*0422	*0659	*0896	*1134	*1372
119	14	1610	1848	2086	2324	2563	2802	3041	3280	3520	3760
120		4000	4240	4480	4720	4961	5202	5443	5684	5926	6168
121		9410	6652	6894	7136	7379	7622	7865	8108	8352	8596
122		8840	9084	9328	9572	9817	*0062	*0307	*0552	*0798	*1044
123	15	1290	1536	1782	2028	2275	2522	2769	3016	3264	3512
124		3760	4008	4256	4504	4753	5002	5251	5500	5750	6000
125		6250	6500	6750	7000	7251	7502	7753	8004	8256	8508
126		8760	9012	9264	9516	9769	*0022	*0275	*0528	*0782	*1036
127	16	1290	1544	1798	2052	2307	2562	2817	3072	3328	3584
128		3840	4096	4352	4608	4865	5122	5379	5636	5894	6152
129		6410	6668	6926	7184	7443	7702	7961	8220	8480	8740
130		9000	9260	9520	9780	*0041	*0302	*0563	*0824	*1086	*1348
131	17	1610	1872	2134	2396	2659	2922	3185	3448	3712	3976
132		4240	4504	4768	5032	5297	5562	5827	6092	6358	6624
133		6890	7156	7422	7688	7955	8222	8489	8756	9024	9292
134		9560	9828	*0096	*0364	*0633	*0902	*1171	*1440	*1710	*1980
135	18	2250	2520	2790	3060	3331	3602	3873	4144	4416	4688
136		4960	5232	5504	5776	6049	6322	6595	6868	7142	7416
137		7690	7964	8238	8512	8787	9062	9337	9612	9888	*0164
138	19	0440	0716	0992	1268	1545	1822	2099	2376	2654	2932
139		3210	3488	3766	4044	4323	4602	4881	5160	5440	5720
140		6000	6280	6560	6840	7121	7402	7683	7964	8246	8528
141		8810	9092	9374	9656	9939	*0222	*0505	*0788	*1072	*1356
142	20	1640	1924	2208	2492	2777	3062	3347	3632	3918	4204
143		4490	4776	5062	5348	5635	5922	6209	6496	6784	7072
144		7360	7648	7936	8224	8513	8802	9091	9380	9670	9960
145	21	0250	0540	0830	1120	1411	1702	1993	2284	2576	2868
146		3160	3452	3744	4036	4329	4622	4915	5208	5502	5796
147		6090	6384	6678	6972	7267	7562	7857	8152	8448	8744
148		9040	9336	9632	9928	*0225	*0522	*0819	*1116	*1414	*1712
149	22	2010	2308	2606	2904	3203	3502	3801	4100	4400	4700
150		5000	5300	5600	5900	6201	6502	6803	7104	7406	7708
L.Z.		0	1	4	9	6	5	6	9	4	1

N.	N ²	0	1	2	3	4	5	6	7	8	9
150	22	5000	5300	5600	5900	6201	6502	6803	7104	7406	7708
151		8010	8312	8614	8916	9219	9522	9825	*0128*	*0432*	*0736
152	23	1040	1344	1648	1952	2257	2562	2867	3172	3478	3784
153		4090	4396	4702	5008	5315	5622	5929	6236	6544	6852
154		7160	7468	7776	8084	8393	8702	9011	9320	9630	9940
155	24	0250	0560	0870	1180	1491	1802	2113	2424	2736	3048
156		3360	3672	3984	4296	4609	4922	5235	5548	5862	6176
157		6490	6804	7118	7432	7747	8062	8377	8692	9008	9324
158		9640	9956	*0272*	*0588*	*0905	*1222*	*1539*	*1856*	*2174*	*2492
159	25	2810	3128	3446	3764	4083	4402	4721	5040	5360	5680
160		6000	6320	6640	6960	7281	7602	7923	8244	8566	8888
161		9210	9532	9854	*0176*	*0499	*0822*	*1145*	*1468*	*1792*	*2116
162	26	2440	2764	3088	3412	3737	4062	4387	4712	5038	5364
163		5690	6016	6342	6668	6995	7322	7649	7976	8304	8632
164		8960	9288	9616	9944	*0273	*0602*	*0931*	*1260*	*1590*	*1920
165	27	2250	2580	2910	3240	3571	3902	4233	4564	4896	5228
166		5560	5892	6224	6556	6889	7222	7555	7888	8222	8556
167		8890	9224	9558	9892	*0227	*0562*	*0897*	*1232*	*1568*	*1904
168	28	2240	2576	2912	3248	3585	3922	4259	4596	4934	5272
169		5610	5948	6286	6624	6963	7302	7641	7980	8320	8660
170		9000	9340	9680	*0020*	*0361	*0702*	*1043*	*1384*	*1726*	*2068
171	29	2410	2752	3094	3436	3779	4122	4465	4808	5152	5496
172		5840	6184	6528	6872	7217	7562	7907	8252	8598	8944
173		9290	9636	9982	*0328*	*0675	*1022*	*1369*	*1716*	*2064*	*2412
174	30	2760	3108	3456	3804	4153	4502	4851	5200	5550	5900
175		6250	6600	6950	7300	7651	8002	8353	8704	9056	9408
176		9760	*0112*	*0464*	*0816*	*1169	*1522*	*1875*	*2228*	*2582*	*2936
177	31	3290	3644	3998	4352	4707	5062	5417	5772	6128	6484
178		6840	7196	7552	7908	8265	8622	8979	9336	9694	*0052
179	32	0410	0768	1126	1484	1843	2202	2561	2920	3280	3640
180		4000	4360	4720	5080	5441	5802	6163	6524	6886	7248
181		7610	7972	8334	8696	9059	9422	9785	*0148*	*0512*	*0876
182	33	1240	1604	1968	2332	2697	3062	3427	3792	4158	4524
183		4890	5256	5622	5988	6355	6722	7089	7456	7824	8192
184		8560	8928	9296	9664	*0033	*0402*	*0771*	*1140*	*1510*	*1880
185	34	2250	2620	2990	3360	3731	4102	4473	4844	5216	5588
186		5960	6332	6704	7076	7449	7822	8195	8568	8942	9316
187		9690	*0064*	*0438*	*0812*	*1187	*1562*	*1937*	*2312*	*2688*	*3064
188	35	3440	3816	4192	4568	4945	5322	5699	6076	6454	6832
189		7210	7588	7966	8344	8723	9102	9481	9860	*0240*	*0620
190	36	1000	1380	1760	2140	2521	2902	3283	3664	4046	4428
191		4810	5192	5574	5956	6339	6722	7105	7488	7872	8256
192		8640	9024	9408	9792	*0177	*0562*	*0947*	*1332*	*1718*	*2104
193	37	2490	2876	3262	3648	4035	4422	4809	5196	5584	5972
194		6360	6748	7136	7524	7913	8302	8691	9080	9470	9860
195	38	0250	0640	1030	1420	1811	2202	2593	2984	3376	3768
196		4160	4552	4944	5336	5729	6122	6515	6908	7302	7696
197		8090	8484	8878	9272	9667	*0062*	*0457*	*0852*	*1248*	*1644
198	39	2040	2436	2832	3228	3625	4022	4419	4816	5214	5612
199		6010	6408	6806	7204	7603	8002	8401	8800	9200	9600
200	40	0000	0400	0800	1200	1601	2002	2403	2804	3206	3608
L.Z.		0	1	4	9	6	5	6	9	4	1

N.	N ²	0	1	2	3	4	5	6	7	8	9
200	4	00000	00400	00800	01200	01601	02002	02403	02804	03206	03608
201		04010	04412	04814	05216	05619	06022	06425	06828	07232	07636
202		08040	08444	08848	09252	09657	10062	10467	10872	11278	11684
203		12090	12496	12902	13308	13715	14122	14529	14936	15344	15752
204		16160	16568	16976	17384	17793	18202	18611	19020	19430	19840
205		20250	20660	21070	21480	21891	22302	22713	23124	23536	23948
206		24360	24772	25184	25596	26009	26422	26835	27248	27662	28076
207		28490	28904	29318	29732	30147	30562	30977	31392	31808	32224
208		32640	33056	33472	33888	34305	34722	35139	35556	35974	36392
209		36810	37228	37646	38064	38483	38902	39321	39740	40160	40580
210		41000	41420	41840	42260	42681	43102	43523	43944	44366	44788
211		45210	45632	46054	46476	46899	47322	47745	48168	48592	49016
212		49440	49864	50288	50712	51137	51562	51987	52412	52838	53264
213		53690	54116	54542	54968	55395	55822	56249	56676	57104	57532
214		57960	58388	58816	59244	59673	60102	60531	60960	61390	61820
215		62250	62680	63110	63540	63971	64402	64833	65264	65696	66128
216		66560	66992	67424	67856	68289	68722	69155	69588	70022	70456
217		70890	71324	71758	72192	72627	73062	73497	73932	74368	74804
218		75240	75676	76112	76548	76985	77422	77859	78296	78734	79172
219		79610	80048	80486	80924	81363	81802	82241	82680	83120	83560
220		84000	84440	84880	85320	85761	86202	86643	87084	87526	87968
221		88410	88852	89294	89736	90179	90622	91065	91508	91952	92396
222		92840	93284	93728	94172	94617	95062	95507	95952	96398	96844
223		97290	97736	98182	98628	99075	99522	99969*	00416*	00864*	01312
224	5	01760	02208	02656	03104	03553	04002	04451	04900	05350	05800
225		06250	06700	07150	07600	08051	08502	08953	09404	09856	10308
226		10760	11212	11664	12116	12569	13022	13475	13928	14382	14836
227		15290	15744	16198	16652	17107	17562	18017	18472	18928	19384
228		19840	20296	20752	21208	21665	22122	22579	23036	23494	23952
229		24410	24868	25326	25784	26243	26702	27161	27620	28080	28540
230		29000	29460	29920	30380	30841	31302	31763	32224	32686	33148
231		33610	34072	34534	34996	35459	35922	36385	36848	37312	37776
232		38240	38704	39168	39632	40097	40562	41027	41492	41958	42424
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763		21690	23216	24742	26268	27795	29322	30849	32376	33904	35432
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794	63	04360	05948	07536	09124	10713	12302	13891	15480	17070	18660
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847		74090	75784	77478	79172	80867	82562	84257	85952	87648	89344
848		91040	92736	94432	96128	97825	99522	*01219*	*02916*	*04614*	*06312
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877		91290	93044	94798	96552	98307	*00062*	*01817*	*03572*	*05328*	*07084
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880		44000	45760	47520	49280	51041	52802	54563	56324	58086	59848
881		61610	63372	65134	66896	68659	70422	72185	73948	75712	77476
882		79240	81004	82768	84532	86297	88062	89827	91592	93358	95124
883		96890	98656	*00422*	*02188*	*03955	*05722*	*07489*	*09256*	*11024*	*12792
884	78	14560	16328	18096	19864	21633	23402	25171	26940	28710	30480
885		32250	34020	35790	37560	39331	41102	42873	44644	46416	48188
886		49960	51732	53504	55276	57049	58822	60595	62368	64142	65916
887		67690	69464	71238	73012	74787	76562	78337	80112	81888	83664
888		85440	87216	88992	90768	92545	94322	96099	97876	99654	*01432
889	79	03210	04988	06766	08544	10323	12102	13881	15660	17440	19220
890		21000	22780	24560	26340	28121	29902	31683	33464	35246	37028
891		38810	40592	42374	44156	45939	47722	49505	51288	53072	54856
892		56640	58424	60208	61992	63777	65562	67347	69132	70918	72704
893		74490	76276	78062	79848	81635	83422	85209	86996	88784	90572
894		92360	94148	95936	97724	99513	*01302*	*03091*	*04880*	*06670*	*08460
895	80	10250	12040	13830	15620	17411	19202	20993	22784	24576	26368
896		28160	29952	31744	33536	35329	37122	38915	40708	42502	44296
897		46090	47884	49678	51472	53267	55062	56857	58652	60448	62244
898		64040	65836	67632	69428	71225	73022	74819	76616	78414	80212
899		82010	83808	85606	87404	89203	91002	92801	94600	96400	98200
900	81	00000	01800	03600	05400	07201	09002	10803	12604	14406	16208
L.Z.		0	1	4	9	6	5	6	9	4	1

N.	N ²	0	1	2	3	4	5	6	7	8	9
900	81	00000	01800	03600	05400	07201	09002	10803	12604	14406	16208
901		18010	19812	21614	23416	25219	27022	28825	30628	32432	34236
902		36040	37844	39648	41452	43257	45062	46867	48672	50478	52284
903		54090	55896	57702	59508	61315	63122	64929	66736	68544	70352
904		72160	73968	75776	77584	79393	81202	83011	84820	86630	88440
905		90250	92060	93870	95680	97491	99302	*01113	*02924	*04736	*06548
906	82	08360	10172	11984	13796	15609	17422	19235	21048	22862	24676
907		26490	28304	30118	31932	33747	35562	37377	39192	41008	42824
908		44640	46456	48272	50088	51905	53722	55539	57356	59174	60992
909		62810	64628	66446	68264	70083	71902	73721	75540	77360	79180
910		81000	82820	84640	86460	88281	90102	91923	93744	95566	97388
911		99210	*01032	*02854	*04676	*06499	*08322	*10145	*11968	*13792	*15616
912	83	17440	19264	21088	22912	24737	26562	28387	30212	32038	33864
913		35690	37516	39342	41168	42995	44822	46649	48476	50304	52132
914		53960	55788	57616	59444	61273	63102	64931	66760	68590	70420
915		72250	74080	75910	77740	79571	81402	83233	85064	86896	88728
916		90560	92392	94224	96056	97889	99722	*01555	*03388	*05222	*07056
917	84	08890	10724	12558	14392	16227	18062	19897	21732	23568	25404
918		27240	29076	30912	32748	34585	36422	38259	40096	41934	43772
919		45610	47448	49286	51124	52963	54802	56641	58480	60320	62160
920		64000	65840	67680	69520	71361	73202	75043	76884	78726	80568
921		82410	84252	86094	87936	89779	91622	93465	95308	97152	98996
922	85	00840	02684	04528	06372	08217	10062	11907	13752	15598	17444
923		19290	21136	22982	24828	26675	28522	30369	32216	34064	35912
924		37760	39608	41456	43304	45153	47002	48851	50700	52550	54400
925		56250	58100	59950	61800	63651	65502	67353	69204	71056	72908
926		74760	76612	78464	80316	82169	84022	85875	87728	89582	91436
927		93290	95144	96998	98852	*00707	*02562	*04417	*06272	*08128	*09984
928	86	11840	13696	15552	17408	19265	21122	22979	24836	26694	28552
929		30410	32268	34126	35984	37843	39702	41561	43420	45280	47140
930		49000	50860	52720	54580	56441	58302	60163	62024	63886	65748
931		67610	69472	71334	73196	75059	76922	78785	80648	82512	84376
932		86240	88104	89968	91832	93697	95562	97427	99292	*01158	*03024
933	87	04890	06756	08622	10488	12355	14222	16089	17956	19824	21692
934		23560	25428	27296	29164	31033	32902	34771	36640	38510	40380
935		42250	44120	45990	47860	49731	51602	53473	55344	57216	59088
936		60960	62832	64704	66576	68449	70322	72195	74068	75942	77816
937		79690	81564	83438	85312	87187	89062	90937	92812	94688	96564
938		98440	*00316	*02192	*04068	*05945	*07822	*09699	*11576	*13454	*15332
939	88	17210	19088	20966	22844	24723	26602	28481	30360	32240	34120
940		36000	37880	39760	41640	43521	45402	47283	49164	51046	52928
941		54810	56692	58574	60456	62339	64222	66105	67988	69872	71756
942		73640	75524	77408	79292	81177	83062	84947	86832	88718	90604
943		92490	94376	96262	98148	*00035	*01922	*03809	*05696	*07584	*09472
944	89	11360	13248	15136	17024	18913	20802	22691	24580	26470	28360
945		30250	32140	34030	35920	37811	39702	41593	43484	45376	47268
946		49160	51052	52944	54836	56729	58622	60515	62408	64302	66196
947		68090	69984	71878	73772	75667	77562	79457	81352	83248	85144
948		87040	88936	90832	92728	94625	96522	98419	*00316	*02214	*04112
949	90	06010	07908	09806	11704	13603	15502	17401	19300	21200	23100
950		25000	26900	28800	30700	32601	34502	36403	38304	40206	42108
L. Z.		0	1	4	9	6	5	6	9	4	1

N.	N ²	0	1	2	3	4	5	6	7	8	9
950	90	25000	26900	28800	30700	32601	34502	36403	38304	40206	42108
951		44010	45912	47814	49716	51619	53522	55425	57328	59232	61136
952		63040	64944	66848	68752	70657	72562	74467	76372	78278	80184
953		82090	83996	85902	87808	89715	91622	93529	95436	97344	99252
954	91	01160	03068	04976	06884	08793	10702	12611	14520	16430	18340
955		20250	22160	24070	25980	27891	29802	31713	33624	35536	37448
956		39360	41272	43184	45096	47009	48922	50835	52748	54662	56576
957		58490	60404	62318	64232	66147	68062	69977	71892	73808	75724
958		77640	79556	81472	83388	85305	87222	89139	91056	92974	94892
959		96810	98728	*00646*	*02564*	*04483	*06402*	*08321*	*10240*	*12160*	*14080
960	92	16000	17920	19840	21760	23681	25602	27523	29444	31366	33288
961		35210	37132	39054	40976	42899	44822	46745	48668	50592	52516
962		54440	56364	58288	60212	62137	64062	65987	67912	69838	71764
963		73690	75616	77542	79468	81395	83322	85249	87176	89104	91032
964		92960	94888	96816	98744	*00673	*02602*	*04531*	*06460*	*08390*	*10320
965	93	12250	14180	16110	18040	19971	21902	23833	25764	27696	29628
966		31560	33492	35424	37356	39289	41222	43155	45088	47022	48956
967		50890	52824	54758	56692	58627	60562	62497	64432	66368	68304
968		70240	72176	74112	76048	77985	79922	81859	83796	85734	87672
969		89610	91548	93486	95424	97363	99302	*01241*	*03180*	*05120*	*07060
970	94	09000	10940	12880	14820	16761	18702	20643	22584	24526	26468
971		28410	30352	32294	34236	36179	38122	40065	42008	43952	45896
972		47840	49784	51728	53672	55617	57562	59507	61452	63398	65344
973		67290	69236	71182	73128	75075	77022	78969	80916	82864	84812
974		86760	88708	90656	92604	94553	96502	98451	*00400*	*02350*	*04300
975	95	06250	08200	10150	12100	14051	16002	17953	19904	21856	23808
976		25760	27712	29664	31616	33569	35522	37475	39428	41382	43336
977		45290	47244	49198	51152	53107	55062	57017	58972	60928	62884
978		64840	66796	68752	70708	72665	74622	76579	78536	80494	82452
979		84410	86368	88326	90284	92243	94202	96161	98120	*00080*	*02040
980	96	04000	05960	07920	09880	11841	13802	15763	17724	19686	21648
981		23610	25572	27534	29496	31459	33422	35385	37348	39312	41276
982		43240	45204	47168	49132	51097	53062	55027	56992	58958	60924
983		62890	64856	66822	68788	70755	72722	74689	76656	78624	80592
984		82560	84528	86496	88464	90433	92402	94371	96340	98310	*00280
985	97	02250	04220	06190	08160	10131	12102	14073	16044	18016	19988
986		21960	23932	25904	27876	29849	31822	33795	35768	37742	39716
987		41690	43664	45638	47612	49587	51562	53537	55512	57488	59464
988		61440	63416	65392	67368	69345	71322	73299	75276	77254	79232
989		81210	83188	85166	87144	89123	91102	93081	95060	97040	99020
990	98	01000	02980	04960	06940	08921	10902	12883	14864	16846	18828
991		20810	22792	24774	26756	28739	30722	32705	34688	36672	38656
992		40640	42624	44608	46592	48577	50562	52547	54532	56518	58504
993		60490	62476	64462	66448	68435	70422	72409	74396	76384	78372
994		80360	82348	84336	86324	88313	90302	92291	94280	96270	98260
995	99	00250	02240	04230	06220	08211	10202	12193	14184	16176	18168
996		20160	22152	24144	26136	28129	30122	32115	34108	36102	38096
997		40090	42084	44078	46072	48067	50062	52057	54052	56048	58044
998		60040	62036	64032	66028	68025	70022	72019	74016	76014	78012
999		80010	82008	84006	86004	88003	90002	92001	94000	96000	98000
1000	100	00000	02000	04000	06000	08001	10002	12003	14004	16006	18008
L.Z.		0	1	4	9	6	5	6	9	4	1

Tafel I.

Argument: $(t + t' = 2c)$.

	Diff.		Diff.		Diff.
—25	4.24508	3	4.26788	31	4.28956
—24	4.24591	4	4.26868	32	4.29032
—23	4.24674	5	4.26947	33	4.29107
—22	4.24758	6	4.27025	34	4.29182
—21	4.24841	7	4.27104	35	4.29257
—20	4.24924	8	4.27183	36	4.29332
—19	4.25006	9	4.27262	37	4.29407
—18	4.25089	10	4.27340	38	4.29482
—17	4.25172	11	4.27418	39	4.29556
—16	4.25254	12	4.27497	40	4.29631
—15	4.25336	13	4.27576	41	4.29705
—14	4.25418	14	4.27654	42	4.29779
—13	4.25500	15	4.27731	43	4.29853
—12	4.25581	16	4.27809	44	4.29927
—11	4.25663	17	4.27886	45	4.30001
—10	4.25744	18	4.27964	46	4.30075
—9	4.25825	19	4.28041	47	4.30148
—8	4.25906	20	4.28118	48	4.30221
—7	4.25987	21	4.28195	49	4.30295
—6	4.26068	22	4.28271	50	4.30368
—5	4.26149	23	4.28348	51	4.30441
—4	4.26229	24	4.28425	52	4.30514
—3	4.26309	25	4.28501	53	4.30587
—2	4.26390	26	4.28577	54	4.30659
—1	4.26470	27	4.28653	55	4.30732
0	4.26550	28	4.28729	56	4.30804
1	4.26629	29	4.28805	57	4.30877
2	4.26709	30	4.28881	58	4.30949
3	4.26788	31	4.28956	59	4.31021
				60	4.31093

Tafel II.

Argument: $x = 45^\circ - y$.

Je nachdem $x \begin{matrix} > \\ < \end{matrix} 0$, hat man das
Zeichen \pm anzuwenden.

x		x	
0	0.00000	23	0.00082
1	4	24	85
2	8	25	87
3	12	26	90
4	16	27	92
5	20	28	95
6	24	29	97
7	28	30	0.00099
8	31	31	101
9	35	32	103
10	0.00039	33	104
11	43	34	106
12	46	35	107
13	50	36	109
14	54	37	110
15	57	38	111
16	60	39	112
17	64	40	0.00112
18	67	41	113
19	70	42	114
20	0.00073	43	114
21	76	44	114
22	79	45	114

Tafel III.

Argumente: $\log. h$ und z .

2

$\log. h$	0	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	4000
1.0	0.0000	1	2	4	5	7	8	9	11	12	13	20	27	41	54
2.0	1	2	3	5	6	8	9	10	12	13	14	21	28	42	55
2.1	1	2	3	5	6	8	9	10	12	13	14	21	28	42	55
2.2	1	2	3	5	6	8	9	10	12	13	14	21	28	42	55
2.3	1	2	3	5	6	8	9	10	12	13	14	21	28	42	55
2.4	2	3	4	6	7	9	10	11	13	14	15	22	29	43	56
2.5	2	3	4	6	7	9	10	11	13	14	15	22	29	43	56
2.6	3	4	5	7	8	10	11	12	14	15	16	23	30	44	57
2.7	3	4	5	7	8	10	11	12	14	15	16	23	30	44	57
2.8	4	5	6	8	9	11	12	13	15	16	17	24	31	45	58
2.9	5	6	7	9	10	12	13	14	16	17	18	25	32	46	59
3.0	7	8	9	11	12	14	15	16	18	19	20	27	34	48	61
3.1	9	10	11	13	14	16	17	18	20	21	22	29	36	50	63
3.2	11	11	13	15	16	18	19	20	22	23	24	31	38	52	65
3.3	14	15	16	18	19	21	22	23	25	27	27	34	41	55	68
3.4	17	18	19	21	22	24	25	26	28	29	30	37	44	58	71
3.5	22	23	24	26	27	29	30	31	33	34	35	42	49	63	76
3.6	27	28	29	31	32	34	35	36	38	39	40	47	54	68	81
3.7	34	35	36	38	39	41	42	43	45	46	47	54	61	75	88
3.8	45	43	45	47	48	50	51	52	54	55	56	63	70	84	97

Tafel IV. 1.

Temperatur	0.0	0.2	0.4	0.6	0.8
—14.0	1.51	1.49	1.47	1.44	1.42
—13.0	1.64	1.62	1.59	1.57	1.54
—12.0	1.78	1.75	1.73	1.70	1.67
—11.0	1.93	1.90	1.87	1.84	1.81
—10.0	2.09	2.06	2.03	2.00	1.97
— 9.0	2.27	2.24	2.20	2.16	2.13
— 8.0	2.46	2.42	2.38	2.35	2.31
— 7.0	2.67	2.63	2.58	2.54	2.50
— 6.0	2.89	2.84	2.80	2.75	2.71
— 5.0	3.12	3.08	3.03	2.98	2.93
— 4.0	3.37	3.32	3.27	3.22	3.17
— 3.0	3.64	3.59	3.53	3.48	3.43
— 2.0	3.93	3.87	3.81	3.75	3.70
— 1.0	4.24	4.17	4.11	4.05	3.99
0.0	4.56	4.50	4.43	4.36	4.30
	4.56	4.63	4.70	4.76	4.83
1.0	4.90	4.97	5.05	5.12	5.19
2.0	5.27	5.34	5.42	5.50	5.57
3.0	5.65	5.73	5.81	5.90	5.98
4.0	6.06	6.15	6.24	6.32	6.41
5.0	6.50	6.59	6.68	6.78	6.87
6.0	6.97	7.07	7.16	7.26	7.36
7.0	7.46	7.57	7.67	7.77	7.88
8.0	7.99	8.10	8.21	8.32	8.43
9.0	8.55	8.67	8.78	8.90	9.02
10.0	9.15	9.27	9.39	9.52	9.64
11.0	9.77	9.90	10.03	10.17	10.30
12.0	10.44	10.58	10.72	10.86	11.00
13.0	11.15	11.29	11.44	11.59	11.74
14.0	11.90	12.05	12.21	12.37	12.53
15.0	12.69	12.85	13.02	13.19	13.76
16.0	13.53	13.70	13.88	14.05	14.23
17.0	14.42	14.60	14.78	14.97	15.16
18.0	15.35	15.55	15.74	15.94	16.14
19.0	16.35	16.55	16.76	16.97	17.18
20.0	17.39	17.61	17.83	18.05	18.27
21.0	18.50	18.73	18.96	19.19	19.43
22.0	19.66	19.91	20.15	20.70	20.65
23.0	20.90	21.15	21.41	21.67	21.93
24.0	22.20	22.46	22.74	23.01	23.29
25.0	23.57	23.85	24.13	24.42	24.71
26.0	25.01	25.30	25.60	25.91	26.22
27.0	26.53	26.84	27.15	27.47	27.80
28.0	28.12	28.46	28.78	29.13	29.47
29.0	29.81	20.15	30.50	30.86	31.21
30.0	31.58	31.94	32.31	32.68	33.05

Tafel IV. 2.

B.	$t - t'$										Wenn das feuchte Thermometer mit Eis bedeckt ist. $t - t'$		
	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	1.	2.	3.
400	0.32	0.64	0.96	1.28	1.60	1.92	2.24	2.56	2.88	3.20	0.28	0.55	0.83
420	0.34	0.69	1.02	1.34	1.68	2.02	2.35	2.69	3.02	3.36	0.29	0.58	0.87
440	0.35	0.70	1.06	1.41	1.76	2.11	2.46	2.82	3.17	3.52	0.30	0.60	0.91
460	0.37	0.74	1.10	1.47	1.84	2.21	2.57	2.94	3.31	3.68	0.32	0.63	0.95
480	0.38	0.77	1.15	1.53	1.92	2.30	2.69	3.07	3.46	3.84	0.33	0.66	0.99
500	0.40	0.80	1.20	1.60	2.00	2.40	2.80	3.20	3.60	4.00	0.35	0.69	1.04
520	0.42	0.84	1.25	1.66	2.08	2.50	2.93	3.33	3.74	4.16	0.36	0.72	1.08
540	0.43	0.87	1.30	1.73	2.16	2.59	3.05	3.46	3.89	4.32	0.37	0.75	1.12
560	0.45	0.90	1.34	1.79	2.23	2.69	3.14	3.58	4.03	4.48	0.39	0.77	1.16
580	0.46	0.93	1.39	1.86	2.32	2.78	3.25	3.71	4.18	4.64	0.40	0.80	1.20
600	0.48	0.96	1.44	1.92	2.40	2.88	3.36	3.84	4.32	4.80	0.41	0.83	1.24
620	0.50	0.99	1.49	1.98	2.48	2.98	3.47	3.97	4.46	4.96	0.43	0.86	1.28
640	0.51	1.02	1.54	2.05	2.56	3.07	3.58	4.10	4.61	5.12	0.44	0.88	1.33
660	0.53	1.06	1.58	2.11	2.64	3.17	3.70	4.22	4.75	5.28	0.46	0.91	1.37
680	0.54	1.09	1.63	2.18	2.72	3.26	3.81	4.35	4.90	5.44	0.47	0.94	1.41
700	0.56	1.12	1.68	2.24	2.80	3.36	3.92	4.48	5.04	5.60	0.48	0.97	1.45
720	0.58	1.15	1.73	2.30	2.88	3.46	4.03	4.61	5.18	5.76	0.50	1.00	1.49
740	0.59	1.18	1.78	2.37	2.96	3.55	4.14	4.74	5.33	5.92	0.51	1.02	1.53
760	0.61	1.21	1.83	2.44	3.04	3.65	4.26	4.87	5.48	6.08	0.53	1.05	1.57
780	0.63	1.24	1.89	2.51	3.12	3.75	4.37	5.00	5.63	6.24	0.54	1.08	1.62

Tafel IV. 3.

B mm	C mm									
	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
400	41	82	128	164	206	247	289	330	371	411
420	39	78	117	156	196	235	275	314	353	391
440	37	75	112	150	187	225	262	299	337	374
460	36	72	107	143	179	215	251	286	322	358
480	34	69	103	137	172	206	240	274	309	343
500	33	66	99	132	165	198	230	263	296	329
520	32	63	95	127	158	190	221	253	284	316
540	30	61	91	122	152	183	213	244	274	305
560	29	59	88	118	147	177	206	235	265	294
580	28	58	86	114	143	171	200	228	257	284
600	28	55	83	110	139	166	194	221	248	274
620	27	53	81	107	134	160	187	214	240	267
640	26	52	78	104	130	156	181	207	233	258
660	25	50	76	101	125	151	176	200	225	250
680	24	49	74	98	122	147	171	194	218	242
700	24	47	72	95	119	142	165	189	212	235
720	23	46	69	92	115	138	160	183	206	228
740	22	45	67	89	111	134	155	178	200	222
760	22	44	66	87	108	130	151	173	195	216
780	21	42	63	84	105	126	147	169	190	211

Tafel V.

$T' - T''$	
1	0.00008
2	16
3	23
4	31
5	0.00039
6	47
7	55
8	62
9	70
10	0.00078
11	86
12	94
13	101
14	109
15	0.00117
16	125
17	133
18	141
19	148
20	0.00156

Tafel VI.

Argument: Barometerstand h^{mm} .

h^{mm}	Seehöhe in Metern	Diff. für 1 mm	h^{mm}	Seehöhe in Metern	Diff. für 1 mm
400	5137.2		600	1892.0	
410	4939.6	—19.5	610	1759.8	—13.2
420	4746.7	—19.1	620	1629.9	—13.1
430	4558.3	—18.6	630	1501.5	—12.9
440	4374.4	—18.2	640	1375.5	—12.7
450	4194.5	—17.8	650	1251.4	—12.5
460	4018.6	—17.4	660	1129.1	—12.3
470	3846.4	—17.0	670	1008.8	—12.1
480	3677.9	—16.7	680	890.2	—12.0
490	3512.8	—16.3	690	773.3	—11.8
500	3351.2	—16.0	700	658.2	—11.6
510	3192.7	—15.7	710	544.6	—11.4
520	3037.3	—15.4	720	432.7	—11.3
530	2884.9	—15.1	730	322.4	—11.1
540	2735.2	—14.8	740	213.4	—11.0
550	2588.4	—14.5	750	105.9	—10.8
560	2444.2	—14.3	760	0.0	—10.7
570	2302.6	—14.0	770	—104.8	—10.7
580	2163.3	—13.8	780	—207.9	—10.6
590	2026.5	—13.6			—10.5
600	1892.0	—13.4			

Tafel VII.

$t' + t''$ °C.	Corrfect.	$t' + t''$ °C.	Corrfect.	$t' + t''$ °C.	Corrfect.	$t' + t''$ °C.	Corrfect.
1	0.0018	15	0.0275	29	0.0531	43	0.0787
2	0.0037	16	0.0293	30	0.0549	44	0.0805
3	0.0055	17	0.0311	31	0.0567	45	0.0823
4	0.0073	18	0.0329	32	0.0586	46	0.0842
5	0.0091	19	0.0348	34	0.0604	47	0.0860
6	0.0110	20	0.0366	33	0.0622	48	0.0878
7	0.0128	21	0.0384	35	0.0640	49	0.0897
8	0.0146	22	0.0403	36	0.0659	50	0.0915
9	0.0164	23	0.0421	37	0.0677	51	0.0933
10	0.0183	24	0.0439	38	0.0696	52	0.0952
11	0.0201	25	0.0458	39	0.0714	53	0.0970
12	0.0220	26	0.0476	40	0.0732	54	0.0988
13	0.0238	27	0.0495	41	0.0750	55	0.1006
14	0.0257	28	0.0513	42	0.0769	56	0.1025

Tafel VIII.

$t'' - t'''$ °C.	Met.	$t'' - t'''$ °C.	Met.
1	1.3	13	16.7
2	2.6	14	18.0
3	3.9	15	19.3
4	5.1	16	20.5
5	6.4	17	21.8
6	7.7	18	23.1
7	9.0	19	24.4
8	10.3	20	25.8
9	11.6	21	27.1
10	12.8	22	28.3
11	14.1	23	29.6
12	15.4	24	30.9
13	16.7	25	32.1

Tafel IX.

h mm	c mm									
	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
400	0.0005	0.0009	0.0014	0.0019	0.0023	0.0028	0.0032	0.0037	0.0042	0.0047
420	0.0004	0.0009	0.0014	0.0018	0.0022	0.0026	0.0031	0.0036	0.0041	0.0045
440	0.0004	0.0009	0.0013	0.0017	0.0021	0.0025	0.0030	0.0035	0.0039	0.0043
460	0.0004	0.0008	0.0012	0.0016	0.0020	0.0024	0.0029	0.0033	0.0037	0.0041
480	0.0004	0.0008	0.0012	0.0016	0.0020	0.0024	0.0028	0.0032	0.0036	0.0040
500	0.0004	0.0008	0.0011	0.0015	0.0019	0.0023	0.0027	0.0031	0.0034	0.0039
520	0.0004	0.0007	0.0011	0.0015	0.0018	0.0022	0.0026	0.0030	0.0033	0.0037
540	0.0003	0.0007	0.0010	0.0014	0.0018	0.0021	0.0025	0.0029	0.0032	0.0035
560	0.0003	0.0007	0.0010	0.0014	0.0017	0.0020	0.0024	0.0028	0.0031	0.0034
580	0.0003	0.0007	0.0010	0.0013	0.0016	0.0019	0.0023	0.0027	0.0030	0.0033
600	0.0003	0.0006	0.0009	0.0012	0.0015	0.0019	0.0022	0.0025	0.0028	0.0031
620	0.0003	0.0006	0.0009	0.0012	0.0015	0.0018	0.0021	0.0024	0.0027	0.0030
640	0.0003	0.0006	0.0009	0.0012	0.0015	0.0018	0.0021	0.0023	0.0026	0.0029
660	0.0003	0.0006	0.0009	0.0012	0.0014	0.0017	0.0020	0.0022	0.0025	0.0028
680	0.0003	0.0005	0.0008	0.0011	0.0014	0.0017	0.0019	0.0021	0.0024	0.0027
700	0.0003	0.0005	0.0008	0.0011	0.0013	0.0016	0.0018	0.0020	0.0023	0.0026
720	0.0003	0.0005	0.0008	0.0010	0.0013	0.0015	0.0017	0.0020	0.0023	0.0025
740	0.0003	0.0005	0.0007	0.0010	0.0012	0.0015	0.0017	0.0020	0.0022	0.0025
760	0.0002	0.0005	0.0007	0.0010	0.0012	0.0015	0.0017	0.0020	0.0022	0.0025
780	0.0002	0.0005	0.0007	0.0009	0.0012	0.0014	0.0016	0.0019	0.0022	0.0024

Tafel X.

Argument: $x = 45^\circ - \psi^\circ$.Je nachdem $x \begin{matrix} \geq \\ \leq \end{matrix} 0$, hat man das Zeichen \pm anzuwenden.

x	Corrfact.	x	Corrfact.	x	Corrfact.	x	Corrfact.
0	0.0000	12	0.0011	24	0.0019	35	0.0025
1	0.0001	13	0.0012	25	0.0020	36	0.0025
2	0.0002	14	0.0012	26	0.0020	37	0.0025
3	0.0003	15	0.0013	27	0.0021	38	0.0025
4	0.0004	16	0.0013	28	0.0021	39	0.0025
5	0.0005	17	0.0014	29	0.0022	40	0.0025
6	0.0005	18	0.0015	30	0.0022	41	0.0026
7	0.0006	19	0.0015	31	0.0023	42	0.0026
8	0.0007	20	0.0016	32	0.0023	43	0.0026
9	0.0008	21	0.0017	33	0.0024	44	0.0026
10	0.0009	22	0.0018	34	0.0024	45	0.0026
11	0.0010	23	0.0019				

Tafel XI.

h met.	z met.					
	0	100	500	1000	1500	2000
100	0.0	0.0	0.0	0.0	0.0	0.1
500	0.0	0.1	0.1	0.2	0.3	0.4
1000	0.2	0.2	0.4	0.5	0.7	0.8
1500	0.3	0.4	0.6	0.8	1.0	1.3
2000	0.6	0.7	0.9	1.2	1.5	1.9
2500	1.0	1.1	1.4	1.8	2.2	2.6
3000	1.4	1.5	1.9	2.3	2.8	3.3
4000	2.5	2.6	3.1	3.7	4.4	5.0

Siedepunkt des Wassers bei verschiedenen Barometerständen.

Barometerstand.	Siedepunkt.	Barometerstand.	Siedepunkt.
mm		mm	
1075.37	110° C.	707.26	98° C.
787.63	101.0	682.03	97
773.71	100.5	657.54	96
760.00	100.0	633.78	95
746.52	99.5	525.45	90
733.21	99.0	433.04	85
720.13	98.5	91.98	50

26 Zoll.

Gr. de R.	0 lin.	1	2	3	4	5	6	7	8	9	10	11
	+	+	+	+	+	+	+	+	+	+	+	+
— 14	0.79	0.79	0.79	0.80	0.80	0.80	0.80	0.81	0.81	0.81	0.81	0.82
13	72	73	73	73	73	74	74	74	74	75	75	75
12	66	66	67	67	67	67	68	68	68	68	68	69
11	60	60	60	60	61	61	61	61	61	62	62	62
10	54	54	54	54	54	54	55	55	55	55	55	55
9	47	47	48	48	48	48	48	48	48	49	49	49
8	41	41	41	41	41	42	42	42	42	42	42	42
7	35	35	35	35	35	35	35	35	36	36	36	36
6	28	28	29	29	29	29	29	29	29	29	29	29
5	22	22	22	22	22	22	22	23	23	23	23	23
4	16	16	16	16	16	16	16	16	16	16	16	16
3	09	09	09	10	10	10	10	10	10	10	10	10
2	03	03	03	03	03	03	03	03	03	03	03	03
— 1	—	—	—	—	—	—	—	—	—	—	—	—
0	03	03	03	03	03	03	03	03	03	03	03	03
+ 1	10	10	10	10	10	10	10	10	10	10	10	10
2	16	16	16	12	16	16	16	16	16	16	16	16
3	22	22	22	26	22	23	23	23	23	23	23	23
4	28	29	29	29	29	29	29	29	29	29	29	29
5	35	35	35	35	35	35	35	35	36	36	36	36
6	41	41	41	41	42	42	42	42	42	42	42	42
7	47	47	48	48	48	48	48	48	48	49	49	49
8	54	54	54	54	54	54	55	55	55	55	55	55
9	60	60	60	60	61	61	61	61	61	62	62	62
10	66	66	67	67	67	67	67	68	68	68	68	68
11	72	73	73	73	73	74	74	74	74	74	75	75
12	79	79	79	79	80	80	80	80	81	81	81	81
13	85	85	85	86	86	86	87	87	87	87	88	88
14	91	91	92	92	92	92	92	93	93	93	93	94
15	97	98	98	98	99	99	99	1.00	1.00	1.00	1.01	1.01
16	1.04	1.04	1.04	1.05	1.05	1.05	1.05	06	06	07	07	07
17	10	10	11	11	11	12	12	12	13	13	13	14
18	17	17	17	17	18	18	18	19	19	19	20	20
19	22	23	23	24	24	24	25	25	26	26	26	27
20	29	29	29	30	30	31	31	32	32	32	33	33
21	35	35	36	36	37	37	38	38	38	39	39	40
22	41	42	42	42	43	43	44	44	45	45	46	46
23	47	48	48	49	49	50	50	51	51	52	52	53
24	54	54	55	55	56	56	57	57	57	58	58	59
25	1.60	1.60	1.61	1.61	1.62	1.62	1.63	1.63	1.64	1.64	1.65	1.65
Gr. R.	0 lin.	1	2	3	4	5	6	7	8	9	10	11

27 Zoll.

Grade R.	0 lin.	1	2	3	4	5	6	7	8	9	10	11
	+	+	+	+	+	+	+	+	+	+	+	+
-14	0.82	0.82	0.82	0.83	0.83	0.83	0.83	0.84	0.84	0.84	0.84	0.85
13	75	76	76	76	76	77	77	77	77	77	78	78
12	69	69	69	69	70	70	70	70	70	71	71	71
11	62	62	63	63	63	63	63	64	64	64	64	64
10	56	56	56	56	56	57	57	57	57	57	57	58
9	49	49	49	50	50	50	50	50	50	50	51	51
8	43	43	43	43	43	43	43	43	44	44	44	44
7	36	36	36	36	36	37	37	37	37	37	37	37
6	29	30	30	30	30	30	30	30	30	30	30	30
5	23	23	23	23	23	23	23	23	23	24	22	24
4	16	16	16	16	17	17	17	17	17	17	17	17
3	10	10	10	10	10	10	10	10	10	10	10	10
2	03	03	03	03	03	03	03	03	03	03	03	03
	-	-	-	-	-	-	-	-	-	-	-	-
+ 1	03	03	03	03	03	03	03	03	03	03	04	04
0	10	10	10	10	10	10	10	10	10	10	10	10
+ 1	16	17	17	17	17	17	17	17	17	17	17	17
2	23	23	23	23	23	23	23	24	24	24	24	24
3	30	30	30	30	30	30	30	30	30	30	30	31
4	36	36	36	36	36	37	37	37	37	37	37	38
5	43	43	43	43	43	43	43	43	44	44	44	44
6	49	49	49	50	50	50	50	50	50	50	51	51
7	56	56	56	56	56	56	57	57	57	57	57	57
8	62	62	63	63	63	63	63	63	64	64	64	64
9	69	69	69	69	69	70	70	70	70	71	71	71
10	75	75	76	76	76	76	77	77	77	77	77	78
11	82	82	82	82	83	83	83	83	84	84	84	84
12	88	89	89	89	89	89	90	90	90	91	91	91
13	95	95	95	96	96	96	96	97	97	97	98	98
14	1.01	1.01	1.02	1.02	1.02	1.03	1.03	1.03	1.04	1.04	1.04	1.05
15	08	08	08	09	09	09	10	10	10	11	11	11
16	14	14	15	15	16	16	16	17	17	17	18	18
17	21	21	21	22	22	22	23	23	24	24	24	25
18	27	27	28	28	29	29	29	30	30	31	31	31
19	34	34	34	35	35	36	36	36	37	37	38	38
20	40	40	41	41	42	42	43	43	43	44	44	45
21	47	47	47	48	48	49	49	50	50	51	51	51
22	53	53	54	54	55	55	56	56	57	57	58	58
23	59	60	60	61	61	62	62	63	63	64	64	65
24	1.66	1.66	1.67	1.67	1.68	1.68	1.69	1.70	1.71	1.71	1.71	1.72
Gr.	0 lin.	1	2	3	4	5	6	7	8	9	10	11

28 Zoll.

Grade R.	0 lin.	1	2	3	4	5	6	7	8	9	10	11
+	+	+	+	+	+	+	+	+	+	+	+	+
-14	0.85	0.85	0.85	0.86	0.86	0.86	0.86	0.87	0.87	0.87	0.87	0.88
13	78	79	79	79	79	79	80	80	80	80	80	81
12	71	72	72	72	72	72	72	73	73	73	73	74
11	65	65	65	65	65	65	66	66	66	66	66	67
10	58	58	58	58	58	59	59	59	59	59	59	60
9	51	51	51	51	52	52	52	52	52	52	52	53
8	44	44	44	44	45	45	45	45	45	45	45	46
7	37	37	38	38	38	38	38	38	38	38	38	39
6	31	31	31	31	31	31	31	31	31	31	31	32
5	24	24	24	24	24	24	24	24	24	24	24	24
4	17	17	17	17	17	17	17	17	17	17	17	17
3	10	10	10	10	10	10	10	10	10	10	10	10
2	03	03	03	03	03	03	03	03	03	03	03	03
-	-	-	-	-	-	-	-	-	-	-	-	-
-1	04	04	04	04	04	04	04	04	04	04	04	04
0	10	10	10	10	10	10	10	11	11	11	11	11
+1	17	17	17	17	17	17	17	17	17	18	18	18
2	24	24	24	24	24	24	24	24	24	24	25	25
3	31	31	31	31	31	31	31	31	31	31	32	32
4	37	37	38	38	38	38	38	38	38	38	38	39
5	44	44	44	45	45	45	45	45	45	45	45	46
6	51	51	51	51	52	52	52	52	52	52	52	53
7	58	58	58	58	58	59	59	59	59	59	59	60
8	64	65	65	65	65	65	66	66	66	66	66	67
9	71	71	72	72	72	72	72	73	73	73	73	73
10	78	78	78	79	79	79	79	80	80	80	80	80
11	85	85	85	85	86	86	86	86	87	87	87	87
12	91	92	92	92	92	93	93	93	94	94	94	94
13	98	98	98	99	99	1.00	1.00	1.00	1.00	1.01	1.01	1.01
14	1.05	1.05	1.06	1.06	1.06	06	07	07	07	08	08	08
15	12	12	12	13	13	13	14	14	14	15	15	15
16	18	19	19	19	20	20	20	21	21	22	22	22
17	25	25	26	26	27	27	27	28	28	28	29	29
18	32	32	32	33	33	34	34	35	35	35	36	36
19	39	39	39	40	40	41	41	41	42	42	43	43
20	45	46	46	47	47	47	48	48	49	49	50	50
21	52	52	53	53	54	54	55	55	56	56	56	57
22	59	59	60	60	61	61	61	62	62	63	63	64
23	65	66	66	67	67	68	68	69	69	70	70	71
24	1.72	1.73	1.73	1.74	1.74	1.75	1.75	1.76	1.76	1.77	1.77	1.78
Gr.	0 lin.	1	2	3	4	5	6	7	8	9	10	11

Grade C.	705 ^{mm}	710 ^{mm}	715 ^{mm}	720 ^{mm}	725 ^{mm}	730 ^{mm}	735 ^{mm}	740 ^{mm}
	+	+	+	+	+	+	+	+
—17°	1.94	1.95	1.97	1.98	1.99	2.01	2.02	2.04
16	1.83	1.84	1.85	1.87	1.88	1.90	1.90	1.92
15	1.71	1.72	1.74	1.75	1.76	1.77	1.78	1.80
14	1.60	1.61	1.62	1.63	1.64	1.65	1.67	1.68
13	1.48	1.49	1.50	1.51	1.53	1.54	1.55	1.56
12	1.37	1.38	1.39	1.40	1.40	1.42	1.43	1.44
11	1.25	1.26	1.27	1.28	1.29	1.30	1.31	1.32
10	1.14	1.15	1.16	1.16	1.17	1.18	1.19	1.20
9	1.03	1.03	1.04	1.05	1.05	1.06	1.07	1.08
8	0.91	0.92	0.93	0.93	0.94	0.94	0.95	0.96
7	0.80	0.80	0.81	0.81	0.82	0.83	0.83	0.84
6	0.68	0.69	0.69	0.70	0.70	0.71	0.71	0.72
5	0.57	0.57	0.58	0.58	0.59	0.60	0.60	0.60
4	0.45	0.46	0.46	0.47	0.47	0.47	0.48	0.48
3	0.34	0.34	0.35	0.35	0.35	0.35	0.36	0.36
2	0.23	0.23	0.23	0.23	0.23	0.24	0.24	0.24
— 1	0.11	0.11	0.12	0.12	0.12	0.12	0.12	0.12
0	+	+	+	+	+	+	+	+
+	—	—	—	—	—	—	—	—
1	0.11	0.11	0.12	0.12	0.12	0.12	0.12	0.12
2	0.23	0.23	0.23	0.23	0.23	0.24	0.24	0.24
3	0.34	0.34	0.35	0.35	0.35	0.35	0.36	0.36
4	0.45	0.46	0.46	0.46	0.47	0.47	0.47	0.48
5	0.57	0.57	0.58	0.58	0.58	0.59	0.60	0.60
6	0.68	0.69	0.69	0.70	0.70	0.71	0.71	0.72
7	0.79	0.80	0.81	0.81	0.82	0.82	0.83	0.84
8	0.91	0.92	0.93	0.93	0.94	0.94	0.95	0.95
9	1.02	1.03	1.04	1.04	1.05	1.06	1.06	1.07
10	1.14	1.14	1.15	1.16	1.17	1.18	1.19	1.19
11	1.25	1.26	1.27	1.28	1.28	1.29	1.30	1.31
12	1.36	1.37	1.38	1.39	1.40	1.41	1.42	1.43
13	1.48	1.49	1.50	1.51	1.52	1.53	1.54	1.55
14	1.59	1.60	1.61	1.62	1.63	1.64	1.66	1.67
15	1.70	1.71	1.73	1.74	1.75	1.76	1.78	1.79
16	1.82	1.83	1.84	1.85	1.87	1.88	1.89	1.91
17	1.93	1.94	1.96	1.97	1.98	2.00	2.01	2.02
18	2.04	2.06	2.07	2.08	2.10	2.11	2.13	2.14
19	2.16	2.17	2.19	2.20	2.22	2.23	2.25	2.26
20	2.27	2.28	2.30	2.32	2.33	2.35	2.36	2.38
21	2.38	2.40	2.41	2.43	2.45	2.47	2.48	2.50
22	2.49	2.51	2.53	2.55	2.56	2.58	2.60	2.62
23	2.61	2.63	2.64	2.66	2.68	2.70	2.72	2.74
24	2.72	2.74	2.76	2.78	2.80	2.82	2.84	2.85
25	2.83	2.85	2.87	2.89	2.91	2.93	2.95	2.97
26	2.94	2.97	2.99	3.01	3.03	3.05	3.07	3.09
27	3.06	3.08	3.10	3.12	3.14	3.17	3.19	3.21
28	3.17	3.19	3.21	3.24	3.26	3.28	3.30	3.33
29	3.28	3.31	3.33	3.35	3.38	3.40	3.42	3.45
30	3.40	3.42	3.44	3.47	3.49	3.52	3.54	3.56
31	3.51	3.53	3.56	3.58	3.61	3.63	3.66	3.68
32	3.62	3.65	3.67	3.70	3.72	3.75	3.77	3.80

745mm	750mm	755mm	760mm	765mm	770mm	775mm	780mm	Grade C.
+	+	+	+	+	+	+	+	
2.05	2.06	2.08	2.09	2.11	2.12	2.13	2.14	-17°
1.93	1.94	1.95	1.97	1.98	1.99	2.01	2.02	16
1.81	1.82	1.83	1.84	1.86	1.87	1.88	1.89	15
1.69	1.70	1.71	1.72	1.73	1.74	1.76	1.77	14
1.57	1.58	1.59	1.60	1.61	1.62	1.63	1.64	13
1.45	1.46	1.46	1.47	1.49	1.49	1.50	1.50	12
1.33	1.33	1.34	1.35	1.36	1.37	1.38	1.38	11
1.20	1.21	1.22	1.23	1.24	1.24	1.25	1.25	10
1.08	1.09	1.10	1.11	1.11	1.12	1.13	1.14	9
0.96	0.97	0.98	0.98	0.99	1.00	1.00	1.01	8
0.84	0.85	0.85	0.86	0.87	0.87	0.88	0.88	7
0.72	0.73	0.73	0.74	0.74	0.75	0.75	0.76	6
0.60	0.61	0.61	0.61	0.62	0.62	0.63	0.63	5
0.48	0.48	0.49	0.49	0.49	0.50	0.50	0.51	4
0.36	0.36	0.36	0.37	0.37	0.37	0.38	0.38	3
0.24	0.24	0.24	0.24	0.25	0.25	0.25	0.25	2
0.12	0.12	0.12	0.12	0.12	0.12	0.13	0.13	-1
+	+	+	+	+	+	+	+	0
-	-	-	-	-	-	-	-	
0.12	0.12	0.12	0.12	0.12	0.12	0.13	0.13	+1
0.24	0.24	0.24	0.25	0.25	0.25	0.25	0.25	2
0.36	0.36	0.36	0.37	0.37	0.37	0.38	0.38	3
0.48	0.48	0.49	0.49	0.49	0.50	0.50	0.51	4
0.60	0.60	0.61	0.61	0.62	0.62	0.63	0.63	5
0.72	0.73	0.73	0.74	0.74	0.75	0.75	0.76	6
0.84	0.85	0.85	0.86	0.86	0.87	0.87	0.88	7
0.96	0.97	0.97	0.98	0.99	0.99	1.00	1.00	8
0.08	1.09	1.10	1.10	1.11	1.12	1.12	1.13	9
1.20	1.21	1.22	1.22	1.23	1.24	1.25	1.26	10
1.32	1.33	1.34	1.35	1.36	1.36	1.37	1.37	11
1.44	1.45	1.46	1.47	1.48	1.49	1.50	1.51	12
1.56	1.57	1.58	1.59	1.60	1.61	1.62	1.63	13
1.68	1.69	1.70	1.71	1.72	1.74	1.75	1.76	14
1.80	1.81	1.82	1.84	1.85	1.86	1.87	1.88	15
1.92	1.93	1.94	1.96	1.97	1.98	2.00	2.01	16
2.04	2.05	2.07	2.08	2.09	2.11	2.12	2.13	17
2.16	2.17	2.19	2.20	2.22	2.23	2.25	2.26	18
2.28	2.29	2.31	2.32	2.34	2.35	2.37	2.38	19
2.40	2.41	2.43	2.44	2.46	2.48	2.49	2.50	20
2.52	2.53	2.55	2.57	2.58	2.60	2.62	2.63	21
2.63	2.65	2.67	2.69	2.71	2.72	2.74	2.76	22
2.75	2.77	2.79	2.81	2.83	2.85	2.87	2.89	23
2.87	2.89	2.91	2.93	2.95	2.97	2.99	3.01	24
2.99	3.01	3.03	3.05	3.07	3.09	3.11	3.13	25
3.11	3.13	3.15	3.17	3.19	3.22	3.24	3.26	26
3.23	3.25	3.27	3.30	3.32	3.34	3.36	3.38	27
3.35	3.37	3.39	3.42	3.44	3.46	3.48	3.50	28
3.47	3.49	3.52	3.54	3.56	3.59	3.61	3.63	29
3.59	3.61	3.64	3.66	3.68	3.71	3.73	3.75	30
3.71	3.73	3.76	3.78	3.81	3.83	3.86	3.89	31
3.83	3.85	3.88	3.90	3.93	3.95	3.98	4.01	32

27 Zoll.

F°	0	1	2	3	4	5	6	7	8	9
	+	+	+	+	+	+	+	+	+	+
0	0692	0695	0698	0700	0703	0705	0708	0710	0713	0715
1	0668	0671	0673	0675	0678	0680	0683	0685	0688	0690
2	0644	0646	0648	0651	0653	0656	0658	0660	0663	0665
3	0619	0622	0624	0626	0629	0631	0633	0635	0638	0640
4	0595	0597	0599	0602	0604	0606	0608	0610	0613	0615
5	0571	0573	0575	0577	0579	0581	0583	0585	0588	0590
6	0546	0548	0550	0552	0554	0556	0559	0561	0563	0565
7	0522	0524	0526	0528	0530	0532	0534	0536	0537	0539
8	0498	0500	0501	0503	0505	0507	0509	0511	0512	0514
9	0473	0475	0477	0479	0480	0482	0484	0486	0487	0489
10	0449	0451	0452	0454	0456	0457	0459	0461	0462	0464
11	0425	0426	0428	0429	0431	0433	0434	0436	0437	0439
12	0400	0402	0403	0405	0406	0408	0409	0411	0412	0414
13	0376	0378	0379	0380	0382	0383	0385	0386	0387	0389
14	0352	0353	0355	0356	0357	0358	0360	0361	0362	0364
15	0328	0329	0330	0331	0332	0334	0335	0336	0337	0339
16	0303	0304	0306	0307	0308	0309	0310	0311	0312	0313
17	0279	0280	0281	0282	0283	0284	0285	0286	0287	0288
18	0255	0256	0257	0258	0259	0259	0260	0261	0262	0263
19	0231	0231	0232	0233	0234	0235	0236	0236	0237	0238
20	0206	0207	0208	0209	0209	0210	0211	0212	0212	0213
21	0182	0183	0183	0184	0185	0185	0186	0187	0187	0188
22	0158	0158	0159	0159	0160	0161	0161	0162	0162	0163
23	0133	0134	0134	0135	0135	0136	0136	0137	0137	0138
24	0109	0110	0110	0110	0111	0111	0112	0112	0112	0113
25	0085	0085	0086	0086	0086	0087	0087	0087	0088	0088
26	0061	0061	0061	0062	0062	0062	0062	0062	0063	0063
27	0037	0037	0037	0037	0037	0037	0037	0037	0038	0038
28	0012	0012	0012	0012	0013	0013	0013	0013	0013	0013
	+	+	+	+	+	+	+	+	+	+
29	0012	0012	0012	0012	0012	0012	0012	0012	0012	0012
30	0036	0036	0036	0037	0037	0037	0037	0037	0037	0037
31	0060	0061	0061	0061	0061	0061	0062	0062	0062	0062
32	0085	0085	0085	0085	0086	0086	0086	0087	0087	0087
33	0109	0109	0110	0110	0110	0111	0111	0112	0112	0112
34	0133	0133	0134	0134	0135	0135	0136	0136	0137	0137
35	0157	0158	0158	0159	0159	0160	0161	0161	0162	0162
36	0181	0182	0183	0183	0184	0185	0185	0186	0187	0187
37	0205	0206	0207	0208	0209	0209	0210	0211	0212	0212
38	0230	0230	0231	0232	0233	0234	0235	0236	0236	0237
39	0254	0255	0256	0257	0258	0259	0259	0260	0261	0262
40	0278	0279	0280	0281	0282	0283	0284	0285	0286	0287
41	0302	0303	0304	0305	0307	0308	0309	0310	0311	0312
42	0326	0327	0329	0330	0331	0332	0334	0335	0336	0337
43	0350	0352	0353	0354	0356	0357	0358	0360	0361	0362
44	0375	0376	0377	0379	0380	0381	0383	0384	0386	0387
F°	0	1	2	3	4	5	6	7	8	9

28 Zoll.

0	1	2	3	4	5	6	7	8	9	F°
+	+	+	+	+	+	+	+	+	+	
0718	0721	0723	0726	0728	0731	0733	0736	0739	0741	0
0693	0695	0698	0700	0703	0705	0708	0710	0713	0715	1
0668	0670	0672	0675	0677	0679	0682	0684	0687	0689	2
0642	0645	0647	0649	0651	0654	0656	0658	0661	0663	3
0617	0619	0621	0624	0626	0628	0630	0632	0635	0637	4
0592	0594	0596	0598	0600	0602	0605	0607	0609	0611	5
0567	0569	0571	0573	0575	0577	0579	0581	0583	0585	6
0541	0543	0545	0547	0549	0551	0553	0555	0557	0559	7
0516	0518	0520	0522	0524	0525	0527	0529	0531	0533	8
0491	0493	0494	0496	0498	0500	0501	0503	0505	0507	9
0466	0468	0469	0471	0472	0474	0476	0478	0479	0481	10
0441	0442	0444	0445	0447	0448	0450	0452	0453	0455	11
0415	0417	0418	0420	0421	0423	0424	0426	0427	0429	12
0390	0392	0393	0394	0396	0397	0398	0400	0401	0403	13
0365	0366	0368	0369	0370	0371	0373	0374	0375	0377	14
0340	0341	0342	0343	0345	0346	0347	0348	0349	0351	15
0315	0316	0317	0318	0319	0320	0321	0322	0324	0325	16
0289	0290	0291	0292	0294	0295	0296	0297	0298	0299	17
0264	0265	0266	0267	0268	0269	0260	0271	0272	0273	18
0239	0240	0241	0242	0242	0243	0244	0245	0246	0247	19
0214	0215	0215	0216	0217	0218	0218	0219	0220	0221	20
0189	0189	0190	0191	0191	0192	0193	0193	0194	0195	21
0164	0164	0165	0165	0166	0166	0167	0168	0168	0169	22
0138	0139	0139	0140	0140	0141	0141	0142	0142	0143	23
0113	0114	0114	0115	0115	0115	0116	0116	0117	0117	24
0088	0088	0089	0089	0089	0090	0099	0090	0091	0091	25
0063	0063	0063	0064	0064	0064	0064	0065	0065	0065	26
0038	0038	0038	0038	0038	0039	0039	0039	0039	0039	27
0013	0013	0013	0013	0013	0013	0013	0013	0013	0013	28
+	+	+	+	+	+	+	+	+	+	
0012	0012	0012	0012	0013	0013	0013	0013	0013	0013	29
0037	0038	0038	0038	0038	0038	0038	0038	0039	0039	30
0063	0063	0063	0063	0063	0064	0064	0064	0064	0065	31
0088	0088	0088	0089	0089	0089	0090	0090	0090	0090	32
0113	0113	0114	0114	0114	0115	0115	0115	0116	0116	33
0138	0138	0139	0139	0140	0140	0141	0141	0142	0142	34
0163	0164	0164	0165	0165	0166	0166	0167	0168	0168	35
0188	0189	0189	0190	0191	0191	0192	0193	0193	0194	36
0213	0214	0215	0215	0216	0217	0218	0218	0219	0220	37
0238	0239	0240	0241	0242	0242	0243	0244	0245	0246	38
0263	0264	0265	0266	0267	0268	0269	0270	0271	0272	39
0288	0289	0291	0291	0292	0293	0294	0295	0297	0298	40
0313	0314	0316	0317	0318	0319	0320	0321	0322	0323	41
0338	0340	0341	0342	0343	0344	0346	0347	0348	0349	42
0363	0365	0366	0367	0369	0370	0371	0373	0374	0375	43
0388	0390	0391	0393	0394	0395	0397	0398	0400	0401	44
0	1	2	3	4	5	6	7	8	9	F°

27 Zoll.

F°	0	1	2	3	4	5	6	7	8	9
45	—	—	—	—	—	—	—	—	—	—
46	0399	0400	0402	0403	0405	0406	0408	0409	0411	0412
47	0423	0424	0426	0428	0429	0431	0432	0434	0435	0437
48	0447	0449	0450	0452	0454	0455	0457	0459	0460	0462
49	0471	0473	0475	0476	0478	0480	0482	0483	0485	0487
50	0495	0497	0499	0501	0513	0504	0506	0508	0510	0512
51	0519	0521	0523	0525	0527	0529	0531	0533	0535	0537
52	0543	0545	0547	0550	0552	0554	0556	0558	0560	0562
53	0568	0570	0572	0574	0576	0578	0580	0582	0584	0586
54	0592	0594	0596	0598	0600	0603	0605	0607	0609	0611
55	0616	0618	0620	0623	0625	0627	0629	0632	0634	0636
56	0640	0642	0645	0647	0649	0652	0654	0656	0659	0661
57	0664	0666	0669	0671	0674	0676	0679	0681	0684	0686
58	0688	0691	0693	0696	0698	0701	0703	0706	0708	0711
59	0712	0715	0717	0720	0723	0725	0728	0731	0733	0736
60	0736	0739	0742	0744	0747	0750	0753	0755	0758	0761
61	0760	0763	0766	0769	0772	0774	0777	0780	0783	0786
62	0784	0787	0790	0793	0796	0799	0802	0805	0808	0810
63	0808	0811	0814	0817	0820	0823	0826	0829	0832	0835
64	0832	0836	0839	0842	0845	0848	0851	0854	0857	0860
65	0856	0860	0863	0866	0869	0872	0876	0879	0882	0885
66	0881	0884	0887	0890	0894	0897	0900	0903	0907	0910
67	0905	0908	0911	0915	0918	0921	0925	0928	0931	0935
68	0929	0932	0935	0939	0942	0946	0949	0953	0956	0960
69	0953	0956	0960	0963	0967	0970	0974	0977	0981	0984
70	0977	0980	0984	0988	0991	0995	0998	1002	1006	1009
71	1001	1004	1008	1012	1016	1019	1023	1027	1030	1034
72	1025	1028	1032	1036	1040	1044	1047	1051	1055	1059
73	1049	1052	1056	1060	1064	1068	1072	1076	1080	1084
74	1073	1077	1081	1085	1089	1093	1097	1101	1104	1108
75	1197	1101	1105	1109	1113	1117	1121	1125	1129	1133
76	1121	1125	1129	1133	1137	1141	1146	1150	1154	1158
77	1145	1149	1153	1157	1162	1166	1170	1174	1179	1183
78	1169	1173	1177	1182	1186	1190	1195	1199	1203	1208
79	1193	1197	1202	1206	1210	1215	1219	1224	1228	1232
80	1217	1221	1226	1230	1235	1239	1244	1248	1253	1257
81	1241	1245	1250	1254	1259	1264	1268	1273	1277	1282
82	1265	1269	1274	1279	1283	1288	1293	1297	1302	1307
83	1289	1293	1298	1303	1308	1312	1317	1322	1327	1332
84	1313	1317	1322	1327	1332	1337	1342	1347	1351	1356
85	1336	1341	1346	1351	1356	1361	1366	1371	1376	1381
86	1360	1365	1370	1376	1381	1386	1391	1396	1401	1406
87	1384	1389	1395	1400	1405	1410	1415	1420	1425	1431
88	1408	1414	1419	1424	1429	1434	1440	1445	1450	1455
89	1432	1438	1443	1448	1453	1459	1464	1469	1475	1480
90	1456	1462	1467	1472	1478	1483	1489	1494	1499	1505
F°	0	1	2	3	4	5	6	7	8	9

28 Zoll.

0	1	2	3	4	5	6	7	8	9	F°
—	—	—	—	—	—	—	—	—	—	
0413	0415	0416	0417	0418	0421	0422	0424	0425	0427	45
0439	0440	0442	0443	0445	0446	0448	0449	0451	0453	46
0464	0465	0467	0469	0470	0472	0473	0475	0477	0478	47
0489	0490	0492	0494	0496	0497	0499	0501	0503	0504	48
0514	0515	0517	0519	0521	0523	0525	0526	0528	0530	49
0539	0541	0542	0544	0546	0548	0550	0552	0554	0556	50
0564	0566	0568	0570	0572	0574	0576	0578	0580	0582	51
0589	0591	0593	0595	0597	0599	0601	0603	0605	0608	52
0614	0616	0618	0620	0622	0625	0627	0629	0631	0633	53
0639	0641	0643	0645	0648	0650	0652	0655	0657	0659	54
0664	0666	0668	0671	0673	0675	0678	0680	0683	0685	55
0689	0691	0693	0696	0698	0701	0703	0706	0708	0711	56
0714	0716	0719	0721	0724	0726	0729	0731	0734	0736	57
0738	0741	0744	0746	0749	0752	0754	0757	0760	0762	58
0763	0766	0769	0772	0774	0777	0780	0783	0785	0788	59
0788	0791	0794	0797	0800	0802	0805	0808	0811	0814	60
0813	0816	0819	0822	0825	0828	0831	0834	0837	0840	61
0838	0841	0844	0847	0850	0853	0856	0859	0862	0865	62
0863	0866	0869	0873	0876	0879	0882	0885	0888	0891	63
0888	0891	0895	0898	0901	0904	0907	0910	0914	0917	64
0913	0916	0920	0923	0926	0929	0933	0936	0939	0942	65
0938	0941	0945	0948	0951	0955	0958	0962	0965	0968	66
0963	0966	0970	0973	0977	0980	0984	0987	0991	0994	67
0988	0991	0995	0999	1002	1006	1009	1013	1016	1020	68
1013	1016	1020	1024	1027	1031	1035	1038	1042	1045	69
1038	1041	1045	1049	1053	1056	1060	1064	1067	1071	70
1063	1066	1070	1074	1078	1082	1085	1089	1093	1097	71
1088	1091	1095	1099	1103	1107	1111	1115	1119	1123	72
1112	1116	1120	1124	1128	1132	1136	1140	1144	1148	73
1137	1141	1145	1150	1154	1158	1162	1166	1170	1174	74
1162	1166	1171	1175	1179	1183	1187	1191	1195	1200	75
1187	1191	1196	1200	1204	1208	1213	1217	1221	1225	76
1212	1216	1221	1225	1229	1234	1238	1242	1247	1251	77
1237	1241	1246	1250	1255	1259	1263	1268	1272	1277	78
1262	1266	1271	1275	1280	1284	1289	1293	1298	1302	79
1287	1291	1296	1300	1305	1310	1314	1319	1323	1328	80
1311	1316	1321	1325	1330	1335	1339	1341	1349	1354	81
1336	1341	1346	1351	1355	1360	1365	1370	1374	1379	82
1361	1366	1371	1376	1381	1385	1390	1395	1400	1405	83
1386	1391	1396	1401	1406	1411	1416	1421	1426	1431	84
1411	1416	1421	1426	1431	1436	1441	1446	1451	1456	85
1436	1441	1446	1451	1456	1461	1466	1472	1477	1482	86
1460	1466	1471	1476	1481	1487	1492	1497	1502	1507	87
1485	1491	1496	1501	1506	1512	1517	1522	1528	1533	88
1510	1515	1521	1526	1532	1537	1542	1548	1553	1559	89
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0	1	2	3	4	5	6	7	8	9	F°

29 Zoll.

F°	0	1	2	3	4	5	6	7	8	9
	+	+	+	+	+	+	+	+	+	+
0	0744	0746	0749	0751	0754	0757	0759	0762	0764	0767
1	0718	0720	0723	0725	0728	0730	0733	0735	0738	0740
2	0691	0694	0696	0699	0701	0703	0706	0708	0710	0713
3	0665	0668	0670	0672	0674	0677	0679	0681	0684	0686
4	0639	0641	0644	0646	0648	0650	0652	0655	0657	0659
5	0613	0615	0617	0619	0621	0624	0626	0628	0630	0632
6	0587	0589	0591	0593	0595	0597	0599	0601	0603	0606
7	0561	0563	0565	0567	0568	0570	0572	0574	0576	0578
8	0535	0536	0538	0540	0542	0544	0546	0547	0549	0551
9	0508	0510	0512	0514	0515	0517	0519	0521	0522	0524
10	0482	0484	0486	0487	0489	0491	0492	0494	0496	0497
11	0456	0458	0459	0461	0463	0464	0466	0467	0469	0470
12	0430	0432	0433	0435	0436	0438	0439	0441	0442	0443
13	0404	0405	0407	0408	0410	0411	0412	0414	0415	0417
14	0378	0379	0381	0382	0383	0384	0386	0387	0388	0390
15	0352	0353	0354	0356	0357	0358	0359	0360	0362	0363
16	0326	0327	0328	0329	0330	0331	0333	0334	0335	0336
17	0300	0301	0302	0303	0304	0305	0306	0307	0308	0309
18	0274	0275	0276	0276	0277	0278	0279	0280	0281	0282
19	0248	0248	0249	0250	0251	0252	0253	0254	0254	0255
20	0222	0222	0223	0224	0225	0225	0226	0227	0228	0228
21	0195	0196	0197	0197	0198	0199	0200	0200	0201	0202
22	0169	0170	0171	0171	0172	0172	0173	0174	0174	0175
23	0143	0144	0144	0145	0145	0146	0146	0147	0147	0148
24	0117	0118	0118	0119	0119	0119	0120	0120	0121	0121
25	0091	0092	0092	0092	0093	0093	0093	0094	0094	0094
26	0065	0066	0066	0066	0066	0066	0067	0067	0067	0067
27	0039	0039	0040	0040	0040	0040	0040	0040	0040	0040
28	0013	0013	0013	0013	0013	0013	0014	0014	0014	0014
	+	+	+	+	+	+	+	+	+	+
	—	—	—	—	—	—	—	—	—	—
29	0013	0013	0013	0013	0013	0013	0013	0013	0013	0013
30	0039	0039	0039	0039	0039	0039	0040	0040	0040	0040
31	0065	0065	0065	0065	0066	0066	0066	0066	0067	0067
32	0091	0091	0091	0092	0092	0092	0093	0093	0093	0094
33	0117	0117	0118	0118	0118	0119	0119	0120	0120	0120
34	0143	0143	0144	0144	0145	0145	0146	0146	0147	0147
35	0169	0169	0170	0170	0171	0172	0172	0173	0173	0174
36	0195	0195	0196	0197	0197	0198	0199	0199	0200	0201
37	0221	0221	0222	0223	0224	0224	0225	0226	0227	0228
38	0247	0247	0248	0249	0250	0251	0252	0253	0253	0254
39	0273	0274	0274	0275	0276	0277	0278	0279	0280	0281
40	0299	0300	0301	0302	0303	0304	0305	0306	0307	0308
41	0325	0326	0327	0328	0329	0330	0331	0332	0333	0335
42	0350	0352	0353	0354	0355	0357	0358	0359	0360	0361
43	0376	0378	0379	0380	0382	0383	0384	0385	0387	0388
44	0402	0404	0405	0406	0408	0409	0411	0412	0413	0415
	—	—	—	—	—	—	—	—	—	—
F°	0	1	2	3	4	5	6	7	8	9

30 Zoll.

0	1	2	3	4	5	6	7	8	9	F°
+	+	+	+	+	+	+	+	+	+	
0769	0772	0774	0777	0780	0782	0785	0787	0790	0792	0
0742	0745	0747	0750	0753	0755	0757	0760	0763	0765	1
0715	0718	0720	0722	0725	0727	0730	0732	0734	0737	2
0688	0690	0693	0695	0697	0700	0702	0704	0707	0709	3
0661	0663	0666	0668	0670	0672	0674	0677	0679	0681	4
0634	0636	0638	0640	0643	0645	0647	0649	0651	0653	5
0607	0609	0611	0613	0615	0617	0619	0621	0623	0625	6
0580	0582	0584	0586	0588	0590	0592	0594	0595	0597	7
0553	0555	0557	0559	0560	0562	0564	0566	0568	0570	8
0526	0528	0529	0531	0533	0535	0537	0538	0540	0542	9
0499	0501	0502	0504	0506	0507	0509	0511	0512	0514	10
0472	0474	0475	0477	0478	0480	0481	0483	0485	0486	11
0445	0446	0448	0449	0451	0452	0454	0455	0457	0458	12
0418	0419	0421	0422	0424	0425	0426	0428	0429	0431	13
0391	0392	0394	0395	0396	0398	0399	0400	0401	0403	14
0364	0365	0366	0368	0369	0370	0371	0372	0374	0375	15
0337	0338	0339	0340	0342	0343	0344	0345	0346	0347	16
0310	0311	0312	0313	0314	0315	0316	0317	0318	0319	17
0283	0284	0285	0286	0287	0288	0289	0290	0291	0292	18
0256	0257	0258	0259	0260	0260	0261	0262	0263	0264	19
0229	0230	0231	0231	0232	0233	0234	0235	0235	0236	20
0202	0203	0204	0204	0205	0206	0206	0207	0208	0208	21
0175	0176	0176	0177	0178	0178	0179	0179	0180	0181	22
0148	0149	0149	0150	0150	0151	0151	0152	0152	0153	23
0121	0122	0122	0123	0123	0123	0124	0124	0125	0125	24
0094	0095	0095	0095	0096	0096	0096	0097	0097	0097	25
0068	0068	0068	0068	0068	0069	0069	0069	0069	0070	26
0041	0041	0041	0041	0041	0041	0041	0042	0042	0042	27
0014	0014	0014	0014	0014	0014	0014	0014	0014	0014	28
+	+	+	+	+	+	+	+	+	+	
0013	0013	0013	0013	0013	0013	0013	0014	0014	0014	29
0040	0040	0040	0041	0041	0041	0041	0041	0041	0041	30
0067	0067	0067	0068	0068	0068	0068	0069	0069	0069	31
0094	0094	0095	0095	0095	0095	0096	0096	0096	0097	32
0121	0121	0122	0122	0122	0123	0123	0124	0124	0124	33
0148	0148	0149	0149	0150	0150	0151	0151	0152	0152	34
0175	0175	0176	0176	0177	0177	0178	0179	0179	0180	35
0201	0202	0203	0203	0204	0205	0205	0206	0207	0207	36
0228	0229	0230	0231	0231	0232	0233	0234	0234	0235	37
0255	0256	0257	0258	0259	0259	0260	0261	0262	0263	38
0282	0283	0284	0285	0286	0287	0288	0289	0290	0290	39
0309	0310	0311	0312	0313	0314	0315	0316	0317	0318	40
0336	0337	0338	0339	0340	0341	0342	0344	0345	0346	41
0363	0364	0365	0366	0367	0369	0370	0371	0372	0373	42
0389	0391	0392	0393	0395	0396	0397	0398	0400	0401	43
0416	0418	0419	0420	0422	0423	0425	0426	0427	0429	44
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0	1	2	3	4	5	6	7	8	9	F°

29 Zoll.

F°	0	1	2	3	4	5	6	7	8	9
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45	0428	0430	0431	0433	0434	0434	0437	0439	0440	0442
46	0454	0456	0457	0459	0460	0462	0464	0465	0467	0468
47	0480	0482	0483	0485	0487	0489	0490	0492	0493	0495
48	0506	0508	0510	0511	0513	0515	0516	0518	0520	0522
49	0532	0534	0536	0537	0539	0541	0543	0545	0547	0548
50	0558	0560	0562	0564	0566	0567	0569	0571	0573	0575
51	0584	0586	0588	0590	0592	0594	0596	0598	0600	0602
52	0610	0612	0614	0616	0618	0620	0622	0624	0626	0629
53	0636	0638	0640	0642	0644	0646	0649	0651	0653	0655
54	0661	0664	0666	0668	0671	0673	0675	0677	0680	0682
55	0687	0690	0692	0694	0697	0699	0701	0704	0706	0709
56	0715	0716	0718	0721	0723	0726	0728	0730	0733	0735
57	0739	0742	0744	0747	0749	0752	0754	0757	0759	0762
58	0765	0768	0770	0773	0775	0778	0781	0783	0786	0789
59	0791	0793	0796	0799	0802	0804	0807	0810	0813	0815
60	0817	0819	0822	0825	0828	0831	0833	0836	0839	0842
61	0842	0845	0848	0851	0854	0857	0860	0863	0866	0868
62	0868	0871	0874	0877	0880	0883	0886	0889	0892	0895
63	0894	0897	0900	0903	0906	0910	0913	0916	0919	0922
64	0920	0923	0926	0929	0933	0936	0939	0942	0945	0948
65	0946	0949	0952	0956	0959	0962	0965	0969	0972	0975
66	0972	0975	0978	0982	0985	0988	0992	0995	0998	1002
67	0997	1001	1004	1008	1011	1015	1018	1021	1025	1028
68	1023	1027	1030	1034	1037	1041	1044	1048	1051	1055
69	1049	1053	1056	1060	1063	1067	1071	1074	1078	1082
70	1075	1079	1082	1086	1090	1093	1097	1101	1104	1108
71	1101	1104	1108	1112	1116	1120	1123	1127	1131	1135
72	1126	1130	1134	1138	1142	1146	1150	1154	1157	1161
73	1152	1156	1160	1164	1168	1172	1176	1180	1184	1188
74	1178	1182	1186	1190	1194	1198	1202	1206	1210	1215
75	1204	1208	1212	1216	1220	1224	1229	1233	1237	1241
76	1229	1234	1238	1242	1246	1251	1255	1259	1263	1268
77	1255	1260	1264	1268	1273	1277	1281	1286	1290	1294
78	1281	1285	1290	1294	1299	1303	1308	1312	1316	1321
79	1307	1311	1316	1320	1325	1329	1334	1338	1343	1347
80	1333	1337	1342	1346	1351	1355	1360	1365	1369	1374
81	1358	1363	1368	1372	1377	1382	1386	1391	1396	1400
82	1384	1389	1394	1398	1403	1408	1413	1417	1422	1427
83	1410	1415	1419	1424	1429	1434	1439	1444	1449	1453
84	1435	1440	1445	1450	1455	1460	1465	1470	1475	1480
85	1461	1466	1471	1476	1481	1486	1491	1496	1501	1507
86	1487	1492	1497	1502	1507	1513	1518	1523	1528	1533
87	1513	1518	1523	1528	1533	1539	1544	1549	1554	1560
88	1538	1544	1549	1554	1560	1565	1570	1575	1581	1586
89	1564	1569	1575	1580	1586	1591	1596	1602	1607	1613
F°	0	1	2	3	4	5	6	7	8	9

30 Zoll.

0	1	2	3	4	5	6	7	8	9	F°
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0443	0445	0446	0447	0449	0450	0452	0453	0455	0456	45
0470	0471	0473	0475	0476	0478	0479	0481	0482	0484	46
0497	0498	0500	0502	0503	0505	0507	0509	0510	0512	47
0523	0525	0527	0529	0530	0532	0534	0536	0537	0539	48
0550	0552	0554	0556	0558	0559	0561	0563	0565	0567	49
0577	0579	0581	0583	0585	0587	0589	0591	0592	0594	50
0604	0606	0608	0610	0612	0614	0616	0618	0620	0622	51
0631	0633	0635	0637	0639	0641	0643	0645	0647	0650	52
0657	0660	0662	0664	0666	0668	0671	0673	0675	0677	53
0684	0686	0689	0691	0693	0696	0698	0700	0702	0705	54
0711	0713	0716	0718	0720	0723	0725	0727	0730	0732	55
0738	0740	0743	0745	0748	0750	0752	0755	0757	0760	56
0764	0767	0770	0772	0775	0777	0780	0782	0785	0787	57
0791	0794	0797	0799	0802	0805	0807	0810	0812	0815	58
0818	0821	0823	0826	0829	0832	0834	0837	0840	0843	59
0845	0848	0850	0853	0856	0859	0862	0864	0867	0870	60
0871	0874	0877	0880	0883	0886	0889	0892	0895	0898	61
0898	0901	0904	0907	0910	0913	0916	0919	0922	0925	62
0925	0928	0931	0934	0937	0940	0943	0947	0950	0953	63
0952	0955	0958	0961	0964	0968	0971	0974	0977	0980	64
0978	0982	0985	0988	0991	0995	0998	1001	1004	1008	65
1005	1008	1012	1015	1018	1022	1025	1029	1032	1035	66
1032	1035	1039	1042	1046	1049	1052	1056	1059	1063	67
1058	1062	1066	1069	1073	1076	1080	1083	1087	1090	68
1085	1089	1092	1096	1100	1103	1107	1110	1114	1118	69
1112	1116	1119	1123	1127	1130	1134	1138	1142	1145	70
1139	1142	1146	1150	1154	1158	1161	1165	1169	1173	71
1165	1169	1173	1177	1181	1185	1189	1192	1196	1200	72
1192	1196	1200	1204	1208	1212	1216	1220	1224	1228	73
1219	1223	1227	1231	1235	1239	1243	1247	1251	1255	74
1245	1249	1254	1258	1262	1266	1270	1274	1278	1283	75
1272	1276	1280	1285	1289	1293	1297	1302	1306	1310	76
1299	1303	1307	1312	1316	1320	1325	1329	1333	1338	77
1325	1330	1334	1338	1343	1347	1352	1356	1361	1365	78
1352	1356	1361	1365	1370	1374	1379	1383	1388	1392	79
1378	1383	1388	1392	1397	1401	1406	1411	1415	1420	80
1405	1410	1414	1419	1424	1429	1433	1438	1443	1447	81
1432	1437	1441	1446	1451	1456	1460	1465	1470	1475	82
1458	1463	1468	1473	1478	1483	1488	1492	1497	1502	83
1485	1490	1495	1500	1505	1510	1515	1520	1525	1530	84
1512	1517	1522	1527	1532	1537	1542	1547	1552	1557	85
1538	1543	1548	1554	1559	1564	1569	1574	1579	1584	86
1565	1570	1575	1580	1586	1591	1596	1601	1607	1612	87
1591	1597	1602	1607	1613	1618	1623	1629	1634	1639	88
1618	1623	1629	1634	1640	1645	1650	1656	1661	1667	89
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0	1	2	3	4	5	6	7	8	9	F°

26 Zoll.

Quecksilber.

Gr. R.	0	1	2	3	4	5	6	7	8	9	10	11
	+	+	+	+	+	+	+	+	+	+	+	+
- 14	0.99	0.99	0.99	1.00	1.00	1.00	1.01	1.01	1.01	1.02	1.02	1.02
13	92	92	92	0.93	0.93	0.93	0.93	0.94	0.94	0.94	0.95	0.95
12	85	85	85	85	86	86	86	87	87	87	87	88
11	78	78	78	78	79	79	79	79	80	80	80	80
10	70	71	71	71	71	72	72	72	72	73	73	73
9	63	64	64	64	64	64	65	65	65	65	65	66
8	56	57	57	57	57	57	57	58	58	58	58	58
7	49	49	50	50	50	50	50	50	51	51	51	51
6	42	42	43	43	43	43	43	43	43	43	44	44
5	35	35	35	36	36	36	36	36	36	36	36	36
4	28	28	28	28	28	29	29	29	29	29	29	29
3	21	21	21	21	21	21	22	22	22	22	22	22
2	14	14	14	14	14	14	14	14	14	15	15	15
- 1	07	07	07	07	07	07	07	07	07	07	07	07
	+	+	+	+	+	+	+	+	+	+	+	+
	-	-	-	-	-	-	-	-	-	-	-	-
+ 1	07	07	07	07	07	07	07	07	07	07	07	07
2	14	14	14	14	14	14	14	14	14	15	15	15
3	21	21	21	21	21	21	22	22	22	22	22	22
4	28	28	28	28	28	29	29	29	29	29	29	29
5	35	35	35	35	36	36	36	36	36	36	36	36
6	42	42	42	43	43	43	43	43	43	43	44	44
+ 7	49	49	49	50	50	50	50	50	50	51	51	51
	-	-	-	-	-	-	-	-	-	-	-	-

Messing.

	-	-	-	-	-	-	-	-	-	-	-	-
- 14	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.21
12	18	18	18	19	19	19	19	19	19	19	19	19
10	17	17	17	17	17	17	17	17	17	17	17	17
8	15	15	16	16	16	16	16	16	16	16	16	16
6	14	14	14	14	14	14	14	14	14	14	14	14
- 4	13	13	13	13	13	13	13	13	13	13	13	13
2	11	11	11	11	11	11	11	11	11	11	11	11
1	10	10	10	10	10	10	11	11	11	11	11	11
0	10	10	10	10	10	10	10	10	10	10	10	10
+ 1	9	9	9	9	9	9	9	9	9	9	9	9
2	8	8	8	8	8	8	8	8	8	8	8	8
4	7	7	7	7	7	7	7	7	7	7	7	7
+ 6	5	5	5	5	5	5	5	5	5	5	5	5
	-	-	-	-	-	-	-	-	-	-	-	-

26 Zoll.

Quecksilber.

Gr. R.	0	1	2	3	4	5	6	7	8	9	10	11
+ 7°	—	—	—	—	—	—	—	—	—	—	—	—
8	0.49	0.49	0.49	0.50	0.50	0.50	0.50	0.50	0.50	0.51	0.51	0.51
9	56	56	57	57	57	57	57	57	58	58	58	58
10	63	63	64	64	64	64	64	65	65	65	65	65
11	70	70	71	71	71	71	72	72	72	72	72	73
12	77	77	78	78	78	78	79	79	79	79	80	80
13	84	84	85	85	85	85	86	86	86	87	87	87
14	91	91	92	92	92	93	93	93	93	94	94	94
15	98	98	99	99	99	1.00	1.00	1.00	1.01	1.01	1.01	1.01
16	1.05	1.05	1.06	1.06	1.06	07	07	07	08	08	08	09
17	12	12	13	13	13	14	14	15	15	15	16	16
18	19	19	20	20	20	21	21	22	22	22	23	23
19	26	26	27	27	28	28	28	29	29	30	30	30
20	33	33	34	34	35	35	36	36	36	37	37	38
21	40	40	41	41	42	42	43	43	44	44	44	45
22	47	47	48	48	49	49	50	50	51	51	52	52
23	54	54	55	55	56	56	57	57	58	58	59	59
24	61	61	62	62	63	63	64	64	65	65	66	66
25	68	68	69	69	70	70	71	72	72	73	73	74
26	75	75	76	76	77	77	78	79	79	80	80	81
27	82	82	83	83	84	85	85	86	86	87	87	88
28	89	89	90	90	91	92	92	93	93	94	95	95
+ 28	96	96	97	97	98	99	89	2.00	2.00	2.01	2.02	2.02

Messing.

+ 6	—	—	—	—	—	—	—	—	—	—	—	—
8	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
10	04	04	04	04	04	04	04	04	04	04	04	04
12	02	02	02	02	02	02	02	02	02	02	02	02
14	01	01	01	01	01	01	01	01	01	01	01	01
16	—	—	—	—	—	—	—	—	—	—	—	—
18	+	+	+	+	+	+	+	+	+	+	+	+
20	01	01	01	01	01	01	01	01	01	01	01	01
22	02	02	02	02	02	02	02	02	02	02	02	02
24	04	04	04	04	04	04	04	04	04	04	04	04
26	05	05	05	05	05	05	05	05	05	05	05	05
28	07	07	07	07	07	07	07	07	07	07	07	07
30	08	08	08	08	08	08	08	08	08	08	08	08
32	10	10	10	10	10	10	10	10	10	10	10	10
+ 34	11	11	11	11	11	11	11	11	11	11	11	11

27 Zoll.

Quecksilber.

Gr. R.	0	1	2	3	4	5	6	7	8	9	10	11
	+	+	+	+	+	+	+	+	+	+	+	+
-14	1.03	1.03	1.03	1.03	1.04	1.04	1.04	1.05	1.04	1.04	1.06	1.04
13	0.95	0.95	0.96	0.96	0.96	0.97	0.97	0.97	0.98	0.98	0.98	0.98
12	88	88	88	89	89	89	89	89	90	90	91	91
11	81	81	81	81	82	82	82	82	83	83	83	83
10	73	73	73	74	74	74	75	75	75	75	75	76
9	66	66	66	66	67	67	67	67	67	68	68	68
8	59	59	59	59	59	59	60	60	60	60	60	61
7	51	51	52	52	52	52	52	52	52	53	53	53
6	44	44	44	44	44	45	45	45	45	45	45	45
5	37	37	37	37	37	37	37	37	37	38	38	38
4	29	29	29	30	30	30	30	30	30	30	30	30
3	22	22	22	22	22	22	22	22	22	23	23	23
2	15	15	15	15	15	15	15	15	15	15	15	15
-1	07	07	07	07	07	07	07	08	08	08	08	08
	+	+	+	+	+	+	+	+	+	+	+	+
+1	07	07	07	07	07	07	07	08	08	08	08	08
2	15	15	15	15	15	15	15	15	15	15	15	15
3	22	22	22	22	22	22	22	22	22	23	23	23
4	29	29	29	29	30	30	30	30	30	30	30	30
5	36	37	37	37	37	37	37	37	37	38	38	38
6	44	44	44	44	44	44	45	45	45	45	45	45
+7	51	51	51	51	52	52	52	52	52	52	53	53
	-	-	-	-	-	-	-	-	-	-	-	-

Messing.

	-	-	-	-	-	-	-	-	-	-	-	-
-14	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21
12	19	19	19	19	19	19	19	19	19	20	20	20
10	18	18	18	18	18	18	18	18	18	18	18	18
8	16	16	16	16	16	16	16	16	16	16	17	17
6	15	15	15	15	15	15	15	15	15	15	15	15
4	13	13	13	13	13	13	13	13	13	13	13	13
2	11	11	12	12	12	12	12	12	12	12	12	12
-1	11	11	11	11	11	11	11	11	11	11	11	11
0	10	10	10	10	10	10	10	10	10	10	10	10
+1	09	09	09	09	09	09	09	09	09	09	09	09
2	08	08	08	08	09	09	09	09	09	09	09	09
4	07	07	07	07	07	07	07	07	07	07	07	07
+6	05	05	05	05	05	05	05	05	06	06	06	06
	-	-	-	-	-	-	-	-	-	-	-	-

27 Zoll.

Quecksilber.

Gr. R.	0	1	2	3	4	5	6	7	8	9	10	11
+	—	—	—	—	—	—	—	—	—	—	—	—
7 ⁰	0.51	0.51	0.51	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.53	0.53
8	58	59	59	59	59	59	59	60	60	60	60	60
9	66	66	66	66	66	67	67	67	67	67	68	68
10	73	73	73	74	74	74	74	74	75	75	75	75
11	80	80	81	81	81	81	82	82	82	82	83	83
12	87	88	88	88	88	89	89	89	90	90	90	90
13	95	95	95	96	96	96	96	97	97	97	98	98
14	1.02	1.02	1.03	1.03	1.03	1.03	1.04	1.04	1.04	1.05	1.05	1.05
15	09	09	10	10	10	11	11	11	12	12	13	13
16	16	17	17	17	18	18	19	19	19	20	20	20
17	24	24	24	25	25	26	26	26	27	27	27	28
18	31	31	32	32	32	33	33	34	34	35	35	35
19	38	39	39	39	40	40	41	41	42	42	42	43
20	45	46	46	47	47	48	48	48	49	49	50	50
21	53	53	54	54	54	55	55	56	56	57	57	58
22	60	60	61	61	62	62	63	63	64	64	65	65
23	67	68	68	69	69	70	70	71	71	72	72	73
24	74	75	75	76	76	77	77	78	79	79	80	80
25	81	82	83	83	84	84	85	85	86	87	87	88
26	89	89	90	90	91	92	92	93	93	94	94	95
27	96	96	97	98	98	99	2.00	2.00	2.01	2.01	2.02	2.03
+	2.03	2.04	2.04	2.05	2.06	2.06	07	07	08	09	09	10
	—	—	—	—	—	—	—	—	—	—	—	—

Messing.

+	—	—	—	—	—	—	—	—	—	—	—	—
6	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.06	0.06	0.06	0.06
8	04	04	04	04	04	04	04	05	05	05	05	05
10	02	02	02	02	02	02	02	02	02	02	02	02
12	01	01	01	01	01	01	01	01	01	01	01	01
	+	+	+	+	+	+	+	+	+	+	+	+
14	01	01	01	01	01	01	01	01	01	01	01	01
16	02	02	02	02	02	02	02	02	02	02	02	02
18	04	04	04	04	04	04	04	04	04	04	04	04
20	05	05	05	05	05	05	05	05	06	06	06	06
22	07	07	07	07	07	07	07	07	07	07	07	07
24	08	08	08	08	08	09	09	09	09	09	09	09
26	10	10	10	10	10	10	10	10	10	10	10	10
+	11	11	12	12	12	12	12	12	12	12	12	12
	+	+	+	+	+	+	+	+	+	+	+	+

28 Zoll.

Quecksilber.

Gr. R.	0	1	2	3	4	5	6	7	8	9	10	11
	+	+	+	+	+	+	+	+	+	+	+	+
-140	1.06	1.06	1.07	1.07	1.08	1.08	1.08	1.09	0.09	1.09	1.09	1.10
13	0.99	0.99	0.99	1.00	00	00	00	01	01	01	02	02
12	91	91	92	0.92	0.92	0.92	0.93	0.93	0.93	0.94	0.94	0.94
11	83	84	84	84	84	85	85	85	86	86	86	86
10	76	76	76	77	77	77	77	77	78	78	78	78
9	68	68	68	69	69	69	70	70	70	70	70	71
8	61	61	61	61	61	62	62	62	62	62	63	63
7	53	53	53	54	54	54	54	54	54	55	55	55
6	46	46	46	46	46	46	46	46	47	47	47	47
5	38	38	38	38	38	38	39	39	39	39	39	39
4	30	30	31	31	31	31	31	31	31	31	31	31
3	23	23	23	23	23	23	23	23	23	23	23	24
2	15	15	15	15	15	15	15	16	16	16	16	16
-1	08	08	08	08	08	08	08	08	08	08	08	08
	+	+	+	+	+	+	+	+	+	+	+	+
+	08	08	08	08	08	08	08	08	08	08	08	08
2	15	15	15	15	15	15	15	15	16	16	16	16
3	23	23	23	23	23	23	23	23	23	23	23	23
4	30	30	30	31	31	31	31	31	31	31	31	31
5	38	38	38	38	38	38	39	39	39	39	39	39
6	45	46	46	46	46	46	46	46	46	47	47	47
+7	53	53	53	53	54	54	54	54	54	54	55	55

Messing.

	-	-	-	-	-	-	-	-	-	-	-	-
-14	0.21	0.21	0.21	0.22	0.22	0.22	0.22	1.22	0.22	0.22	0.22	0.22
12	20	20	20	20	20	20	20	20	20	20	20	20
10	18	18	18	18	18	18	19	19	19	19	19	19
8	17	17	17	17	17	17	17	17	17	17	17	17
6	15	15	15	15	15	15	15	15	15	15	15	16
4	13	14	14	14	14	14	14	14	14	14	14	14
2	12	12	12	12	12	12	12	12	12	12	12	12
-1	11	11	11	11	11	11	11	11	11	11	11	11
0	10	10	10	10	10	10	10	11	11	11	11	11
+1	10	10	10	10	10	10	10	10	10	10	10	10
2	09	09	09	09	09	09	09	09	09	09	09	09
4	07	07	07	07	07	07	07	07	07	07	07	07
+6	06	06	06	06	06	06	06	06	06	06	06	06

28 Zoll.

Quecksilber.

Gr. R.	0	1	2	3	4	5	6	7	8	9	10	11
+ 7 ⁰	0.53	0.53	0.53	0.53	0.54	0.54	0.54	0.54	0.54	0.54	0.55	0.55
8	60	61	61	61	61	61	62	62	62	62	62	62
9	69	69	69	69	69	69	69	70	70	70	70	70
10	76	76	76	76	76	77	77	77	77	78	78	78
11	84	84	84	84	84	84	85	85	85	85	86	86
12	91	91	91	91	92	92	92	93	93	93	93	94
13	99	99	99	99	99	1.00	1.00	1.00	1.00	1.01	1.01	1.01
14	1.06	1.06	1.06	1.07	1.07	07	08	08	08	08	09	09
15	14	14	14	14	15	15	15	16	16	16	17	17
16	21	21	21	22	22	22	23	23	24	24	24	25
17	29	29	29	29	30	30	30	31	31	32	32	32
18	36	36	36	37	37	38	38	39	39	39	40	40
19	43	44	44	44	45	40	46	46	47	47	47	48
20	51	52	52	52	53	53	53	54	54	55	55	56
21	58	59	59	60	60	61	61	62	62	62	63	63
22	66	66	67	67	67	68	69	69	70	70	71	71
23	73	74	74	75	75	76	76	77	77	78	78	79
24	81	81	82	82	83	83	84	84	85	86	86	87
25	88	89	89	90	90	91	92	92	93	93	94	94
26	96	96	97	97	98	99	99	2.00	2.00	2.01	2.01	2.02
27	2.03	2.04	2.04	2.05	2.06	2.06	2.07	07	08	09	09	10
+ 28	11	11	12	12	13	14	14	15	16	16	17	18

Messing.

+ 6	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
8	05	05	05	05	05	05	05	05	05	05	05	05
10	02	02	02	02	02	02	02	02	02	02	02	02
12	01	01	01	01	01	01	01	01	01	01	01	01
14	01	01	01	01	01	01	01	01	01	01	01	01
16	02	02	02	02	02	02	02	02	02	02	02	02
18	04	04	04	04	04	04	04	04	04	04	04	04
20	06	06	06	06	06	06	06	06	06	06	06	06
22	07	07	07	07	07	07	07	07	07	07	07	07
24	09	09	09	09	09	09	09	09	09	09	09	09
26	10	10	10	10	10	10	10	11	11	11	11	11
+ 28	12	12	12	12	12	12	12	12	12	12	12	12
	+	+	+	+	+	+	+	+	+	+	+	+

I. Pariser Zoll und Linien.

Pariser Z. u. Lin.	Milli- meter.	Englische Zoll.	Pariser Z. u. Lin.	Milli- meter.	Englische Zoll.
25 ^z o ^L	676.749	26.6441	28 ^z o ^L	757.959	29.8414
1	679.005	26.7329	1	760.214	29.9302
2	681.260	26.8218	2	762.470	30.0191
3	683.516	26.9106	3	764.726	30.1079
4	685.772	26.9994	4	766.982	30.1967
5	688.028	27.0882	5	769.238	30.2855
6	690.284	27.1770	6	771.494	30.3743
7	692.540	27.2658	7	773.749	30.4631
8	694.795	27.3546	8	776.005	30.5519
9	697.051	27.4435	9	778.261	30.6408
10	699.307	27.5323	10	780.517	30.7296
11	701.563	27.6211	11	782.773	30.8184
26 0	703.819	27.7099	29 0	785.029	30.9072
1	706.074	27.7987			
2	708.330	27.8875			
3	710.586	27.9763			
4	712.842	28.0652			
5	715.098	28.1540			
6	717.354	28.2428			
7	719.609	28.3316			
8	721.865	28.4204			
9	724.121	28.5092			
10	726.377	28.5980			
11	728.633	28.6868			
27 0	730.889	28.7757			
1	733.144	28.8645			
2	735.400	28.9533			
3	737.656	29.0421			
4	739.912	29.1309			
5	742.168	29.2197			
6	744.424	29.3085			
7	746.679	29.3974			
8	748.935	29.4862			
9	751.191	29.5750			
10	753.447	29.6638			
11	755.703	29.7526			
28 0	757.959	29.8414			

Pariser Linien.	Milli- meter.	Englische Zoll.
0.1	0.226	0.0089
0.2	0.451	0.0178
0.3	0.677	0.0266
0.4	0.902	0.0355
0.5	1.128	0.0444
0.6	1.353	0.0533
0.7	1.579	0.0622
0.8	1.805	0.0711
0.9	2.030	0.0799
0.01	0.023	0.0009
0.02	0.045	0.0018
0.03	0.068	0.0027
0.04	0.090	0.0036
0.05	0.113	0.0044
0.06	0.135	0.0053
0.07	0.158	0.0062
0.08	0.180	0.0071
0.09	0.203	0.0080

1 Pariser Fuss = 12.7892 Engl. Zoll = 0.32484 Meter.

1 Pariser Fuss = 12.7892 Engl. Zoll = 0.32484 Meter.

II. Englische Zoll.

Engl. Zoll.	Pariser Z. u. Lin.	Milli- meter.	Engl. Zoll.	Pariser Z. u. Lin.	Milli- meter.
26 ² / ₇	25 ²⁰ / ₁₆₂₉	678.168	30.0	28 ²¹ / ₁₇₈₅	761.986
26.8	1.755	680.708	30.1	2.911	764.526
26.9	2.881	683.248	30.2	4.037	767.066
			30.3	5.163	769.606
27.0	4.007	685.788	30.4	6.289	772.146
27.1	5.133	688.328	30.5	7.415	774.686
27.2	6.259	690.868	30.6	8.541	777.226
27.3	7.385	693.407	30.7	9.667	779.766
27.4	8.511	695.947	30.8	10.793	782.306
27.5	9.637	698.487	30.9	11.919	784.846
27.6	10.763	701.027			
27.7	11.889	703.567	31.0	29 1.045	787.386
27.8	26 1.015	706.107			
27.9	2.140	708.647			
28.0	3.266	711.187			
28.1	4.392	713.727	Engl. Zoll.	Pariser Linien	Milli- meter.
28.2	5.518	716.267			
28.3	6.644	718.807	0.01	0.113	0.254
28.4	7.770	721.347	0.02	0.225	0.508
28.5	8.896	723.887	0.03	0.338	0.762
28.6	10.022	726.427	0.04	0.450	1.016
28.7	11.148	728.967	0.05	0.563	1.270
28.8	27 0.274	731.507	0.06	0.676	1.524
28.9	1.400	734.047	0.07	0.788	1.778
			0.08	0.901	2.032
29.0	2.526	736.587	0.09	1.013	2.286
29.1	3.652	739.127			
29.2	4.778	741.667	0.001	0.011	0.025
29.3	5.904	744.207	0.002	0.023	0.051
29.4	7.030	746.747	0.003	0.034	0.076
29.5	8.156	749.286	0.004	0.045	0.102
29.6	9.282	751.826	0.005	0.056	0.127
29.7	10.408	754.366	0.006	0.068	0.152
29.8	11.534	756.906	0.007	0.079	0.178
29.9	28 0.659	759.446	0.008	0.090	0.203
			0.009	0.101	0.229
30.0	1.785	761.986			

12 Engl. Zoll = 135.114 Par. Linien = 0.30479 Meter.

200 Verwandelung der Barometer- und Thermometerscalen.
III. Millimeter.

Milli- meter.	Pariser Zoll u. Lin.	Englische Zoll.	Milli- meter.	Pariser Zoll u. Lin.	Englische Zoll.
676	24 ² / ₁₁ 1668	26.6147	728	26 ² / ₁₀ 719	28.6619
677	25 0.111	26.6540	729	11.163	28.7013
678	0.555	26.6934	730	11.606	28.7407
679	0.998	26.7328	731	27 0.049	28.7800
680	1.441	26.7721	732	0.493	28.8194
681	1.885	26.8115	733	0.936	28.8588
682	2.328	26.8509	734	1.379	28.8982
683	2.771	26.8902	735	1.823	28.9375
684	3.214	26.9296	736	2.266	28.9769
685	3.658	26.9690	737	2.709	29.0163
686	4.101	27.0084	738	3.152	29.0556
687	4.544	27.0477	739	3.596	29.0950
688	4.988	27.0871	740	4.039	29.1344
689	5.431	27.1265	741	4.482	29.1738
690	5.874	27.1658	742	4.926	29.2131
691	6.318	27.2052	743	5.369	29.2525
692	6.761	27.2446	744	5.812	29.2919
693	7.204	27.2840	745	6.256	29.3312
694	7.647	27.3233	746	6.699	29.3706
695	8.091	27.3627	747	7.142	29.4100
696	8.534	27.4021	748	7.585	29.4494
697	8.977	27.4414	749	8.029	29.4887
698	9.421	27.4808	750	8.472	29.5281
699	9.864	27.5202	751	8.915	29.5675
700	10.307	27.5596	752	9.359	29.6068
701	10.750	27.5989	753	9.802	29.6462
702	11.194	27.6383	754	10.245	29.6856
703	11.637	27.6777	755	10.688	29.7249
704	26 0.080	27.7170	756	11.132	29.7643
705	0.524	27.7564	757	11.575	29.8037
706	0.967	27.7958	758	28 0.018	29.8431
707	1.410	27.8351	759	0.462	29.8824
708	1.854	27.8745	760	0.905	29.9218
709	2.297	27.9139	761	1.348	29.9612
710	2.740	27.9533	762	1.792	30.0005
711	3.183	27.9926	763	2.235	30.0399
712	3.627	28.0320	764	2.678	30.0793
713	4.070	28.0714	765	3.121	30.1187
714	4.513	28.1107	766	3.565	30.1580
715	4.957	28.1501	767	4.008	30.1974
716	5.400	28.1895	768	4.451	30.2368
717	5.843	28.2289	769	4.895	30.2761
718	6.287	28.2682	770	5.338	30.3155
719	6.730	28.3076	771	5.781	30.3549
720	7.173	28.3470	772	6.225	30.3942
721	7.616	28.3863	773	6.668	30.4336
722	8.060	28.4257	774	7.111	30.4730
723	8.503	28.4651	775	7.554	30.5124
724	8.946	28.5045	776	7.998	30.5517
725	9.390	28.5438	777	8.441	30.5911
726	9.833	28.5832	778	8.884	30.6305
727	10.276	28.6226	779	9.328	30.6698
			780	9.771	30.7092

Milli- meter.	Pariser Linien.	Englische Zoll.	Milli- meter.	Pariser Linien.	Englische Zoll.
0.1	0.044	0.0039	0.01	0.004	0.0004
0.2	0.089	0.0079	0.02	0.009	0.0008
0.3	0.133	0.0118	0.03	0.013	0.0012
0.4	0.177	0.0157	0.04	0.018	0.0016
0.5	0.222	0.0197	0.05	0.022	0.0020
0.6	0.266	0.0236	0.06	0.027	0.0024
0.7	0.310	0.0276	0.07	0.031	0.0028
0.8	0.355	0.0315	0.08	0.035	0.0031
0.9	0.399	0.0354	0.09	0.040	0.0035

1 Meter = 33.3708 Engl. Zoll.
= 443.296 Paris. Linien.

Verwandlung der Thermometerscalen.

C.	R.	F.	C.	R.	F.	C.	R.	F.	C.	R.	F.
—	—	—	—	—	+	+	+	+	+	+	+
35.0	28.0	31.0	17.5	14.0	0.5	0.0	0.0	32.0	17.5	14.0	63.5
34.5	27.6	30.1	17.0	13.6	1.4	0.5	0.4	32.9	18.0	14.4	64.4
34.0	27.2	29.2	16.5	13.2	2.3	1.0	0.8	33.8	18.5	14.8	65.3
33.5	26.8	28.3	16.0	12.8	3.2	1.5	1.2	34.7	19.0	15.2	66.2
33.0	26.4	27.4	15.5	12.4	4.1	2.0	1.6	35.6	19.5	15.6	67.1
32.5	26.0	26.5	15.0	12.0	5.0	2.5	2.0	36.5	20.0	16.0	68.0
32.0	25.6	25.6	14.5	11.6	5.9	3.0	2.4	37.4	20.5	16.4	68.9
31.5	25.2	24.7	14.0	11.2	6.8	3.5	2.8	38.3	21.0	16.8	69.8
31.0	24.8	23.8	13.5	10.8	7.7	4.0	3.2	39.2	21.5	17.2	70.7
30.5	24.4	22.9	13.0	10.4	8.6	4.5	3.6	40.1	22.0	17.6	71.6
30.0	24.0	22.0	12.5	10.0	9.5	5.0	4.0	41.0	22.5	18.0	72.5
29.5	23.6	21.1	12.0	9.6	10.4	5.5	4.4	41.9	23.0	18.4	73.4
29.0	23.2	20.2	11.5	9.2	11.3	6.0	4.8	42.8	23.5	18.8	74.3
28.5	22.8	19.3	11.0	8.8	12.2	6.5	5.2	43.7	24.0	19.2	75.2
28.0	22.4	18.4	10.5	8.4	13.1	7.0	5.6	44.6	24.5	19.6	76.1
27.5	22.0	17.5	10.0	8.0	14.0	7.5	6.0	45.5	25.0	20.0	77.0
27.0	21.6	16.6	9.5	7.6	14.9	8.0	6.4	46.4	25.5	20.4	77.9
26.5	21.2	15.7	9.0	7.2	15.8	8.5	6.8	47.3	26.0	20.8	78.8
26.0	20.8	14.8	8.5	6.8	16.7	9.0	7.2	48.2	26.5	21.2	79.7
25.5	20.4	13.9	8.0	6.4	17.6	9.5	7.6	49.1	27.0	21.6	80.6
25.0	20.0	13.0	7.5	6.0	18.5	10.0	8.0	50.0	27.5	22.0	81.5
24.5	19.6	12.1	7.0	5.6	19.4	10.5	8.4	50.9	28.0	22.4	82.4
24.0	19.2	11.2	6.5	5.2	20.3	11.0	8.8	51.8	28.5	22.8	83.3
23.5	18.8	10.3	6.0	4.8	21.2	11.5	9.2	52.7	29.0	23.2	84.2
23.0	18.4	9.4	5.5	4.4	22.1	12.0	9.6	53.6	29.5	23.6	85.1
22.5	18.0	8.5	5.0	4.0	23.0	12.5	10.0	54.5	30.0	24.0	86.0
22.0	17.6	7.6	4.5	3.6	23.9	13.0	10.4	55.4	30.5	24.4	86.9
21.5	17.2	6.7	4.0	3.2	24.8	13.5	10.8	56.3	31.0	24.8	87.8
21.0	16.8	5.8	3.5	2.8	25.7	14.0	11.2	57.2	31.5	25.2	88.7
20.5	16.4	4.9	3.0	2.4	26.6	14.5	11.6	58.1	32.0	25.6	89.6
20.0	16.0	4.0	2.5	2.0	27.5	15.0	12.0	59.0	32.5	26.0	90.5
19.5	15.6	3.1	2.0	1.6	28.4	15.5	12.4	59.9	33.0	26.4	91.4
19.0	15.2	2.2	1.5	1.2	29.3	16.0	12.8	60.8	33.5	26.8	92.3
18.5	14.8	1.3	1.0	0.8	30.2	16.5	13.2	61.7	34.0	27.2	93.2
18.0	14.4	0.4	0.5	0.4	31.1	17.0	13.6	62.6	34.5	27.6	94.1

Decimaltheile der Scalen.

Réaumur.			Celsius.			Fahrenheit.		
R.	C.	F.	C.	R.	F.	F.	R.	C.
0°10	0°13	0°23	0°10	0°08	0°18	0°10	0°04	0°06
0.20	0.25	0.45	0.20	0.16	0.36	0.20	0.09	0.11
0.30	0.38	0.68	0.30	0.24	0.54	0.30	0.13	0.17
0.40	0.50	0.90	0.40	0.32	0.72	0.40	0.18	0.22
0.50	0.63	1.13	0.50	0.40	0.90	0.50	0.22	0.28
0.60	0.76	1.36	0.60	0.48	1.08	0.60	0.27	0.33
0.70	0.88	1.58	0.70	0.56	1.26	0.70	0.31	0.39
0.80	1.00	1.80	0.80	0.64	1.44	0.80	0.36	0.44
0.90	1.14	2.03	0.90	0.72	1.62	0.90	0.40	0.50

Réaumur.			Celsius.			Fahrenheit.		
R.	C.	F.	C.	R.	F.	F.	R.	C.
0°01	0°01	0°02	0°01	0°01	0°02	0°01	0°00	0°01
0.02	0.03	0.05	0.02	0.02	0.04	0.02	0.01	0.01
0.03	0.04	0.07	0.03	0.02	0.05	0.03	0.01	0.02
0.04	0.05	0.09	0.04	0.03	0.07	0.04	0.02	0.02
0.05	0.06	0.11	0.05	0.04	0.09	0.05	0.02	0.03
0.06	0.08	0.14	0.06	0.05	0.11	0.06	0.03	0.03
0.07	0.09	0.16	0.07	0.06	0.13	0.07	0.03	0.04
0.08	0.10	0.18	0.08	0.06	0.14	0.08	0.04	0.04
0.09	0.11	0.20	0.09	0.07	0.16	0.09	0.04	0.05

II.

FORMELN.

Goniometrische Formeln.

$$\sin a^2 + \cos a^2 = 1$$

$$\sec a^2 - \operatorname{tg} a^2 = 1 \quad \text{oder} \quad \sec a^2 = 1 + \operatorname{tg} a^2$$

$$\operatorname{cosec} a^2 - \operatorname{cotg} a^2 = 1 \quad \operatorname{cosec} a^2 = 1 + \operatorname{cotg} a^2$$

$$\sin a \operatorname{cosec} a = 1 \quad \operatorname{cosec} a = \frac{1}{\sin a}$$

$$\cos a \sec a = 1 \quad \sec a = \frac{1}{\cos a}$$

$$\operatorname{tg} a \operatorname{cotg} a = 1 \quad \operatorname{cotg} a = \frac{1}{\operatorname{tg} a}$$

$$\operatorname{tg} a = \frac{\sin a}{\cos a} = \frac{\sec a}{\operatorname{cosec} a} = \operatorname{cosec} 2a - \operatorname{cotg} 2a$$

$$\operatorname{cotg} a = \frac{\cos a}{\sin a} = \frac{\operatorname{cosec} a}{\sec a} = \operatorname{cosec} 2a + \operatorname{cotg} 2a$$

Werthe und Zeichen der trigonometrischen Functionen
für Winkel und Bögen, die $> 90^\circ$.

a sei $< 90^\circ$, so ist für A, das einen Winkel grösser als 90° bedeutet,

	wenn A $= 90^\circ + a$	wenn A $= 180^\circ + a$	wenn A $= 270^\circ + a$
$\sin A$	$+\cos a$	$-\sin a$	$-\cos a$
$\cos A$	$-\sin a$	$-\cos a$	$+\sin a$
$\operatorname{tg} A$	$-\operatorname{cotg} a$	$+\operatorname{tg} a$	$-\operatorname{cotg} a$
$\operatorname{cotg} A$	$-\operatorname{tg} a$	$+\operatorname{cotg} a$	$-\operatorname{tg} a$
$\sec A$	$-\operatorname{cosec} a$	$-\sec a$	$+\operatorname{cosec} a$
$\operatorname{cosec} A$	$+\sec a$	$-\operatorname{cosec} a$	$-\sec a$

$$\sin a = \cos a \operatorname{tg} a = \sqrt{1 - \cos a^2}$$

$$= \frac{\operatorname{tg} a}{\sqrt{1 + \operatorname{tg} a^2}} = 2 \sin \frac{a}{2} \cos \frac{a}{2} = 3 \sin \frac{a}{3} - 4 \left(\sin \frac{a}{3} \right)^3$$

$$= \frac{1}{\sqrt{1 + \operatorname{cotg} a^2}}$$

$$= \cos b \sin (a + b) - \sin b \cos (a + b)$$

$$\begin{aligned}\cos a &= 1 - 2 \sin \frac{1}{2} a^2 = \sqrt{1 - \sin^2 a} \quad 2 \cos \frac{1}{2} a^2 - 1 \\ &= \cos \frac{1}{2} a^2 - \sin \frac{1}{2} a^2\end{aligned}$$

$$= \cos b \cos (a + b) + \sin b \sin (a + b)$$

$$= \frac{1}{\sqrt{1 + \operatorname{tg} a^2}} = \frac{\operatorname{cotg} a}{\sqrt{1 + \operatorname{cotg} a^2}}$$

$$\operatorname{tg} a = \frac{\operatorname{tg} (a + b) - \operatorname{tg} b}{1 + \operatorname{tg} b \operatorname{tg} (a + b)} = \frac{\sin a}{\sqrt{1 - \sin^2 a}} = \frac{\sqrt{1 - \cos a^2}}{\cos a}$$

$$\sin (a + b) = \sin a \cos b + \cos a \sin b$$

$$\sin (a - b) = \sin a \cos b - \cos a \sin b$$

$$\cos (a + b) = \cos a \cos b - \sin a \sin b$$

$$\cos (a - b) = \cos a \cos b + \sin a \sin b$$

$$\operatorname{tg} (a + b) = \frac{\operatorname{tg} a + \operatorname{tg} b}{1 - \operatorname{tg} a \operatorname{tg} b}$$

$$\operatorname{tg} (a - b) = \frac{\operatorname{tg} a - \operatorname{tg} b}{1 + \operatorname{tg} a \operatorname{tg} b}$$

$$\operatorname{cotg} (a + b) = \frac{\operatorname{cotg} a \operatorname{cotg} b - 1}{\operatorname{cotg} a + \operatorname{cotg} b}$$

$$\operatorname{cotg} (a - b) = \frac{\operatorname{cotg} a \operatorname{cotg} b + 1}{\operatorname{cotg} b - \operatorname{cotg} a}$$

$$\sin a \sin b = \frac{1}{2} \cos (a - b) - \frac{1}{2} \cos (a + b)$$

$$\sin a \cos b = \frac{1}{2} \sin (a + b) + \frac{1}{2} \sin (a - b)$$

$$\cos a \sin b = \frac{1}{2} \sin (a + b) - \frac{1}{2} \sin (a - b)$$

$$\cos a \cos b = \frac{1}{2} \cos (a + b) + \frac{1}{2} \cos (a - b)$$

$$\operatorname{tg} a \operatorname{tg} b = \frac{\cos (a - b) - \cos (a + b)}{\cos (a - b) + \cos (a + b)} = \frac{\operatorname{tg} a + \operatorname{tg} b}{\operatorname{cotg} a + \operatorname{cotg} b}$$

$$\operatorname{tg} a \operatorname{cotg} b = \frac{\sin (a + b) + \sin (a - b)}{\sin (a + b) - \sin (a - b)} = \frac{\operatorname{tg} a + \operatorname{cotg} b}{\operatorname{cotg} a + \operatorname{tg} b}$$

$$\operatorname{cotg} a \operatorname{tg} b = \frac{\sin (a + b) - \sin (a - b)}{\sin (a + b) + \sin (a - b)} = \frac{\operatorname{cotg} a + \operatorname{tg} b}{\operatorname{tg} a + \operatorname{cotg} b}$$

$$\operatorname{cotg} a \operatorname{cotg} b = \frac{\cos (a - b) + \cos (a + b)}{\cos (a - b) - \cos (a + b)} = \frac{\operatorname{cotg} a + \operatorname{cotg} b}{\operatorname{tg} a + \operatorname{tg} b}$$

$$\sin a + \sin b = 2 \sin \frac{1}{2} (a + b) \cos \frac{1}{2} (a - b)$$

$$\sin a - \sin b = 2 \sin \frac{1}{2} (a - b) \cos \frac{1}{2} (a + b)$$

$$\cos a + \cos b = 2 \cos \frac{1}{2} (a + b) \cos \frac{1}{2} (a - b)$$

$$\cos a - \cos b = -2 \sin \frac{1}{2} (a + b) \sin \frac{1}{2} (a - b)$$

$$\operatorname{tg} a + \operatorname{tg} b = \frac{\sin(a+b)}{\cos a \cos b}$$

$$\operatorname{tg} a - \operatorname{tg} b = \frac{\sin(a-b)}{\cos a \cos b}$$

$$\operatorname{cotg} a + \operatorname{cotg} b = \frac{\sin(a+b)}{\sin a \sin b}$$

$$\operatorname{cotg} a - \operatorname{cotg} b = -\frac{\sin(a-b)}{\sin a \sin b}$$

$$\sin a + \cos a = \cos(a - 45^\circ) \sqrt{2}$$

$$\sin a - \cos a = \sin(a - 45^\circ) \sqrt{2}$$

$$\operatorname{tg} \frac{1}{2}(a+b) = \frac{\sin a + \sin b}{\cos a + \cos b}$$

$$\operatorname{tg} \frac{1}{2}(a-b) = \frac{\sin a - \sin b}{\cos a + \cos b}$$

$$\operatorname{cotg} \frac{1}{2}(a+b) = \frac{\sin a - \sin b}{\cos b - \cos a}$$

$$\operatorname{cotg} \frac{1}{2}(a-b) = \frac{\sin a + \sin b}{\cos b - \cos a}$$

$$\sin(45^\circ + a) = (\cos a + \sin a) \sqrt{\frac{1}{2}} = \sqrt{\frac{1}{2}}(1 + \sin 2a)$$

$$\sin(45^\circ - a) = (\cos a - \sin a) \sqrt{\frac{1}{2}} = \sqrt{\frac{1}{2}}(1 - \sin 2a)$$

$$\cos(45^\circ + a) = (\cos a - \sin a) \sqrt{\frac{1}{2}} = \sqrt{\frac{1}{2}}(1 - \sin 2a)$$

$$\cos(45^\circ - a) = (\cos a + \sin a) \sqrt{\frac{1}{2}} = \sqrt{\frac{1}{2}}(1 + \sin 2a)$$

$$\begin{aligned} \operatorname{tg}(45^\circ + a) &= \frac{1 + \operatorname{tg} a}{1 - \operatorname{tg} a} = \frac{\cos a + \sin a}{\cos a - \sin a} \\ &= \sqrt{\frac{1 + \sin 2a}{1 - \sin 2a}} = \frac{1 + \sin 2a}{\cos 2a} = \frac{\cos 2a}{1 - \sin 2a} \\ &= \sec 2a + \operatorname{tg} 2a \end{aligned}$$

$$\begin{aligned} \operatorname{tg}(45^\circ - a) &= \frac{1 - \operatorname{tg} a}{1 + \operatorname{tg} a} = \frac{\cos a - \sin a}{\cos a + \sin a} \\ &= \sqrt{\frac{1 - \sin 2a}{1 + \sin 2a}} = \frac{1 - \sin 2a}{\cos 2a} = \frac{\cos 2a}{1 + \sin 2a} \\ &= \sec 2a - \operatorname{tg} 2a \end{aligned}$$

$$\sin a^2 - \sin b^2 = \sin(a+b) \sin(a-b)$$

$$\cos a^2 - \sin b^2 = \cos(a+b) \cos(a-b)$$

$$\sin \frac{1}{2} a = \frac{1}{2} \sqrt{1 + \sin a} - \frac{1}{2} \sqrt{1 - \sin a} = \sqrt{\frac{1 - \cos a}{2}}$$

$$\cos \frac{1}{2} a = \frac{1}{2} \sqrt{1 + \sin a} + \frac{1}{2} \sqrt{1 - \sin a} = \sqrt{\frac{1 + \cos a}{2}}$$

$$\operatorname{tg} \frac{1}{2} a = \sqrt{\frac{1 - \cos a}{1 + \cos a}} = \frac{\sin a}{1 + \cos a} = \frac{1 - \cos a}{\sin a}$$

$$\operatorname{cotg} \frac{1}{2} a = \sqrt{\frac{1 + \cos a}{1 - \cos a}} = \frac{1 + \cos a}{\sin a} = \frac{\sin a}{1 - \cos a}$$

$$\sin 2a = 2 \sin a \cos a = \frac{2 \operatorname{tg} a}{1 + \operatorname{tg}^2 a} = \frac{1}{\frac{1}{2} \operatorname{tg} a + \frac{1}{2} \operatorname{cotg} a}$$

$$\begin{aligned} \cos 2a &= \cos^2 a - \sin^2 a = \cos^4 a - \sin^4 a = 2 \cos^2 a - 1 \\ &= 1 - 2 \sin^2 a = \frac{1 - \operatorname{tg}^2 a}{1 + \operatorname{tg}^2 a} = \frac{\operatorname{cotg} a - \operatorname{tg} a}{\operatorname{cotg} a + \operatorname{tg} a} \end{aligned}$$

$$\begin{aligned} \operatorname{tg} 2a &= \frac{2 \operatorname{tg} a}{1 - \operatorname{tg}^2 a} = \frac{2}{\operatorname{cotg} a - \operatorname{tg} a} \\ &= \frac{1}{2} \operatorname{tg} (45^\circ + a) - \frac{1}{2} \operatorname{tg} (45^\circ - a) \end{aligned}$$

$$\operatorname{cotg} 2a = \frac{\operatorname{cotg} a^2 - 1}{2 \operatorname{cotg} a} = \frac{1}{2} \operatorname{cotg} a - \frac{1}{2} \operatorname{tg} a$$

$$\sec 2a = \frac{\operatorname{cotg} a + \operatorname{tg} a}{\operatorname{cotg} a - \operatorname{tg} a} = \frac{1}{2} \operatorname{tg} (45^\circ + a) + \frac{1}{2} \operatorname{tg} (45^\circ - a)$$

$$\begin{aligned} \operatorname{cosec} 2a &= \frac{1}{2} \operatorname{cotg} a + \frac{1}{2} \operatorname{tg} a = \operatorname{tg} a + \operatorname{cotg} 2a \\ &= \operatorname{cotg} a - \operatorname{cotg} 2a \end{aligned}$$

$$1 + \sin 2a = (\sin a + \cos a)^2$$

$$1 - \sin 2a = (\sin a - \cos a)^2$$

$$1 + \cos 2a = 2 \cos^2 a$$

$$1 - \cos 2a = 2 \sin^2 a$$

$$1 - \sec 2a = -\operatorname{tg} a \operatorname{tg} 2a$$

$$1 - \operatorname{cosec} 2a = -\operatorname{cotg} (45^\circ + a) \operatorname{cotg} 2a.$$

Trigonometrische Formeln.

In den nachstehenden Gleichungen bezeichnen a, b, c die Seiten, A, B, C die denselben gegenüberliegenden Winkel eines Dreiecks.

1. Das rechtwinklige ebene Dreieck. ($C = 90^\circ$.)

Gegeben	Gesucht	Formel.
a, b	A, B, c	$\operatorname{tg} A = \frac{a}{b} = \operatorname{cotg} B; c = \frac{a}{\sin A} = \frac{b}{\cos A} = \sqrt{a^2 + b^2}.$
a, c	A, B, b	$\sin A = \frac{a}{c} = \cos B;$ $b = a \operatorname{cotg} A = c \cos A = \sqrt{c^2 - a^2}.$
c, A	a, b	$a = c \sin A; b = c \cos A.$
a, A	b, c	$b = a \operatorname{cotg} A; c = \frac{a}{\sin A}.$

2. Das schiefwinklige ebene Dreieck.

a, b, c	A	Es wird gesetzt: $s = \frac{a+b+c}{2}$ $\operatorname{tg} \frac{1}{2} A = \sqrt{\frac{(s-b)(s-c)}{s(s-a)}}$
a, b, C	A, B, c	$c \sin \frac{1}{2} (A-B) = (a-b) \sin \frac{1}{2} (A+B);$ $c \cos \frac{1}{2} (A-B) = (a+b) \cos \frac{1}{2} (A+B);$ $\frac{1}{2} (A+B) = 90^\circ - \frac{1}{2} C.$
a, b, A	B, c, C	$\sin B = \frac{b \sin A}{a}; c = \frac{a \sin (A+B)}{\sin A} = \frac{a \sin C}{\sin A};$ $C = 180^\circ - (A+B).$
a, A, B, C	b, c	$b = \frac{a \sin B}{\sin A}; c = \frac{a \sin (A+B)}{\sin A}.$

3. Das rechtwinklige sphärische Dreieck. ($C = 90^\circ$.)

a, b	A, B, c	$\operatorname{cotg} A = \operatorname{cotg} a \sin b; \operatorname{cotg} B = \operatorname{cotg} b \sin a;$ $\cos c = \cos a \cos b.$
a, c	A, B, b	$\sin A = \frac{\sin a}{\sin c}; \cos B = \operatorname{tg} a \operatorname{cotg} c; \cos b = \frac{\cos c}{\cos a}.$
a, A	B, b, c	$\sin B = \frac{\cos a}{\cos c}; \sin b = \operatorname{tg} a \operatorname{cotg} A; \sin c = \frac{\sin a}{\sin A}.$
a, B	A, b, c	$\cos A = \cos a \sin B; \operatorname{tg} b = \operatorname{tg} B \sin a;$ $\operatorname{cotg} c = \operatorname{cotg} a \cos B.$
c, A	a, b, B	$\sin a = \sin c \sin A; \operatorname{tg} b = \operatorname{tg} c \cos A;$ $\operatorname{cotg} B = \cos c \operatorname{tg} A.$
A, B	a, b, c	$\cos a = \frac{\cos A}{\sin B}; \cos b = \frac{\cos B}{\sin A}; \cos c = \operatorname{cotg} A \operatorname{cotg} B.$

4. Das rechtseitige sphärische Dreieck. ($c = 90^\circ$.)

Gegeben	Gesucht	Formel.
A, B	a, b, C	$\cotg a = \cotg A \sin B$; $\cotg b = \cotg B \sin A$; $\cos C = -\cos A \cos B$.
A, C	a, b, B	$\sin a = \frac{\sin A}{\sin C}$; $\cos b = -\tg A \cotg C$; $\cos B = -\frac{\cos C}{\cos A}$.
A, a	b, B, C	$\sin b = \frac{\cos a}{\cos A}$; $\sin B = \tg A \cotg a$; $\sin C = \frac{\sin A}{\sin a}$.
A, b	a, B, C	$\cos a = \cos A \sin b$; $\tg B = -\tg b \sin A$; $\cotg C = -\cotg A \cos b$.
C, a	A, B, b	$\sin A = \sin C \sin a$; $\tg B = -\tg C \cos a$; $\cotg b = -\cos C \tg a$.
a, b	A, B, C	$\cos A = \frac{\cos a}{\sin b}$; $\cos B = \frac{\cos b}{\sin a}$; $\cos C = -\cotg a \cotg b$.

5. Das schiefwinklige sphärische Dreieck.

a, b, c	A	Es wird gesetzt: $s = \frac{a+b+c}{2}$ $\tg \frac{1}{2} A = \sqrt{\frac{\sin(s-b) \sin(s-c)}{\sin s \sin(s-a)}}$
a, b, C	A, c	1) $\cos c = \cos a \cos b + \sin a \sin b \cos C$. $\sin c \sin A = \sin a \sin C$. $\sin c \cos A = \cos a \sin b - \sin a \cos b \cos C$. 2) Man setzt: $\sin a \cos C = m \sin M$, $\cos a = m \cos M$, so wird: $\cos c = m \cos(b - M)$; $\sin c \sin A = \sin a \sin C$; $\sin c \cos A = m \sin(b - M)$. 3) $\sin \frac{1}{2} c \sin \frac{1}{2} (A - B) = \cos \frac{1}{2} C \sin \frac{1}{2} (a - b)$; $\sin \frac{1}{2} c \cos \frac{1}{2} (A - B) = \sin \frac{1}{2} C \sin \frac{1}{2} (a + b)$; $\cos \frac{1}{2} c \sin \frac{1}{2} (A + B) = \cos \frac{1}{2} C \cos \frac{1}{2} (a - b)$; $\cos \frac{1}{2} c \cos \frac{1}{2} (A + B) = \sin \frac{1}{2} C \cos \frac{1}{2} (a + b)$.

Gegeben	Gesucht	Formel.
A, B, c	a, C	<p>1) $\sin C \sin a = \sin A \sin c;$ $\sin C \cos a = \cos A \sin B + \sin A \cos B \cos c;$ $\cos C = -\cos A \cos B + \sin A \sin B \cos c.$</p> <p>2) $\sin \frac{1}{2} C \sin \frac{1}{2} (a+b) = \sin \frac{1}{2} c \cos \frac{1}{2} (A-B);$ $\sin \frac{1}{2} C \cos \frac{1}{2} (a+b) = \cos \frac{1}{2} c \cos \frac{1}{2} (A+B);$ $\cos \frac{1}{2} C \sin \frac{1}{2} (a-b) = \sin \frac{1}{2} c \sin \frac{1}{2} (A-B);$ $\cos \frac{1}{2} C \cos \frac{1}{2} (a-b) = \cos \frac{1}{2} c \sin \frac{1}{2} (A+B).$</p>
a, b, A	B, C, c	<p>$\sin B = \frac{\sin b \sin A}{\sin a}$</p> <p>$\operatorname{tg} \frac{1}{2} C = \frac{\cos \frac{1}{2} (a-b)}{\cos \frac{1}{2} (a+b)} \cotg \frac{1}{2} (A+B)$ $= \frac{\sin \frac{1}{2} (a-b)}{\sin \frac{1}{2} (a+b)} \cotg \frac{1}{2} (A-B);$</p> <p>$\operatorname{tg} \frac{1}{2} c = \frac{\cos \frac{1}{2} (A+B)}{\cos \frac{1}{2} (A-B)} \operatorname{tg} \frac{1}{2} (a+b)$ $= \frac{\sin \frac{1}{2} (A+B)}{\sin \frac{1}{2} (A-B)} \operatorname{tg} \frac{1}{2} (a-b).$</p>
A, B, a	b, c, C	<p>$\sin b = \frac{\sin B \sin a}{\sin A}.$</p> <p>$\operatorname{tg} \frac{1}{2} C$ und $\operatorname{tg} \frac{1}{2} c$ wie oben.</p>
A, B, C	a	<p>Man setzt: $s = \frac{A+B+C}{2}$</p> <p>$\operatorname{tg} \frac{1}{2} a = \sqrt{-\frac{\cos s \cos (s-A)}{\cos (s-B) \cos (s-C)}}.$</p>

Astronomische Reductions-Formeln.

Passagen-Instrument im Meridian.

Zeit-
bestimmung.

Bezeichnet:

U den Uhrstand zur Zeit der Beobachtung;
 ΔU den Uhrfehler;
 α das Azimuth des Instruments, von Süden nach Osten gerechnet;
 i die um Ungleichheit der Dicke der Zapfen corrigirte Neigung der Achse, positiv, wenn West höher;
 c den Collimationsfehler des Fernrohres, bei der Oberen Culmination +, wenn die Gesichtslinie des Fernrohrs östlich, bei der Unteren Culmination +, wenn sie westlich vom Meridian gerichtet ist;
 α , i und c in Zeitsecunden ausgedrückt;
 φ die Polhöhe des Beobachtungsortes;
 δ die Declination des beobachteten Sternes; ist ferner
 $n = i \sin \varphi - \alpha \cos \varphi$,
 $m = i \cos \varphi + \alpha \sin \varphi$, so ist

Zeit der wahren Culmination

T. Mayer'sche
Formel.

$$= U + \Delta U + \alpha \frac{\sin(\varphi - \delta)}{\cos \delta} + i \frac{\cos(\varphi - \delta)}{\cos \delta} + c \sec \delta,$$

oder

Bessel'sche
Formel.

$$= U + \Delta U + m + n \operatorname{tg} \delta + c \sec \delta,$$

oder

Hansen'sche
Formel.

$$= U + \Delta U + i \sec \varphi + n (\operatorname{tg} \delta - \operatorname{tg} \varphi) + c \sec \delta.$$

Faden-
distanzen.

Es bezeichne

F die Distanz eines Seitenfadens vom Mittelfaden für Sterne im Aequator (in Zeit);

τ die Zeit, die ein Stern gebraucht, um die Distanz eines Seitenfadens vom Mittelfaden scheinbar zu durchlaufen, und es sei

$$\log \alpha = 0.9451 - 10.$$

F wird gefunden aus dem Durchgange eines nördlichen Sternes durch alle Fäden mittelst der Formel

$$F = \tau \cos \delta - \alpha \tau^3 \cos \delta;$$

dagegen werden bei Beobachtung irgend eines Sternes die Durchgänge durch die Seitenfäden auf den Mittelfaden reducirt durch:

$$\tau = F \sec \delta + \alpha F^3 \sec \delta^3.$$

Tägliche
Aberration.

Die beobachtete Zeit einer Sternculmination ist zu corrigiren um die tägliche Aberration; die Formel dafür ist:

$$- 0.0207 \varrho \cos \psi \sec \delta,$$

wo ψ die geocentrische Breite, ϱ den Radius Vector bedeutet.

Ungleichheit
der Dicke
der Zapfen.

Ist

J die gesuchte Neigung der Achse bei Lage I.,

J' bei Lage II. des Instrumentes,

N die Neigung, wie das Niveau sie bei Lage I.,

N' wie es sie bei Lage II. angiebt,

l der Winkel der Lagerflächen,

n der Winkel der Niveaufüsse,

$u = N - N'$, so ist

$$J = N - \frac{u}{2 \left(\frac{\sin \frac{1}{2} n}{\sin \frac{1}{2} l} + 1 \right)}$$

$$J' = N' + \frac{u}{2 \left(\frac{\sin \frac{1}{2} n}{\sin \frac{1}{2} l} + 1 \right)}$$

Passagen-Instrument im Verticale des Polarsterns.

Zeit-
bestimmung.

Bezeichnet

Für den Polarstern Für den Zeitstern

S'	S	die Uhrzeit der Beobachtung,
$u + \gamma$	u	die Correction gegen Sternzeit,
α'	α	die scheinbare AR,
δ'	δ	die scheinbare Declination,
z'	z	die Zenithdistanz, z' immer positiv,
		$z = \varphi - \delta$,

so wird

$$S' + \gamma - \alpha' = D' \quad \operatorname{tg} \delta \operatorname{ctg} \delta' = \lambda \quad \operatorname{tg} x_0 = \frac{\lambda \sin \tau}{1 - \lambda \cos \tau}$$

$$S - \alpha = D$$

$$15 (D' - D) = \tau \quad \operatorname{tg} \varphi \operatorname{ctg} \delta = \mu \quad \sin m_0 = \mu \sin x_0$$

und daraus

$$u + Bb + Cc + Ff = \frac{x_0 - m_0}{15} - D$$

worin noch ist:

$$B = \sec \varphi$$

 b die Neigung der Achse,
positiv, wenn West höher,

$$C = \sec \varphi \frac{\sin z' + \sin z}{\sin (z' + z)}$$

 c der Collimationsfehler
des Mittelfadens,

$$F = \sec \varphi \frac{\sin z}{\sin (z' + z)} (\sec m)^k$$

 f die Distanz des Mittel-
fadens von dem, an
welchem der Polarstern
beobachtet ist.

$$k = 1 + 2 \operatorname{ctg} \varphi^2 + \frac{1}{\mu}$$

Zur Bestimmung der Vorzeichen von c und f sei bemerkt, dass $90^\circ + c$ und $90^\circ + c + f$ die Entfernung des Punktes, in welchem die verlängerte westliche Achse des Instrumentes die Himmelskugel trifft, von dem beobachteten Stern während des Durchganges durch die betreffenden Fäden bedeutet.

Genäherte
Rechnung.

Man berechnet

$$\operatorname{tg} \xi = \frac{\sec \delta \operatorname{ctg} \delta' \sin \tau}{1 - \operatorname{tg} \delta \operatorname{ctg} \delta' \cos \tau}$$

$$\sin \eta = \frac{\sin f}{\sin (z' + z)}$$

$$\operatorname{tg} x_1 = \sin \delta \operatorname{tg} (\xi + \eta)$$

$$\sin m_1 = \cos \delta \operatorname{tg} (\xi + \eta) \operatorname{tg} \varphi \cos x_1$$

so wird

$$u = \left(\frac{x_1 - m_1}{15} \right) - (D + Bb + c).$$

Passagen-Instrument im ersten Vertical.

Einstellung
des Sterns.

Der Stundenwinkel t und die Zenithdistanz z eines Sternes während seines Durchgangs durch den ersten Vertical findet sich durch

$$\cos z = \frac{\sin \delta}{\sin \varphi}, \quad \cos (15 t) = \frac{\operatorname{tg} \delta}{\operatorname{tg} \varphi},$$

$$\text{oder } \operatorname{tg} (15 t) = \frac{\operatorname{tg} z}{\cos \varphi}.$$

Ist α die AR, so ist $\alpha - t$ die Sternzeit des Durchgangs durch den Ostvertical, und $\alpha + t$ die Sternzeit des Durchgangs durch den Westvertical.

Ist f die Entfernung eines Seitenfadens vom Mittelfaden in Zeitsecunden, T die Zeit des Antritts des Sterns an den Mittelfaden, z die dieser Zeit entsprechende Zenithdistanz, $T + \delta T$ die Zeit des Antritts des Sterns an den Seitenfaden, und $z + \delta z$ die entsprechende Zenithdistanz, so ist genähert

$$\delta T = \pm \frac{f}{\sin \varphi \sin z}; \quad \delta z = \pm 15 \cos \varphi \delta T.$$

Polhöhen-
bestimmung.

Ist T die Zeit der ersten, T' die der zweiten Beobachtung, und ΔU die Verspätung des Chronometers gegen Sternzeit im Laufe des Zeitraums $T' - T$, so erhält man, unter der Voraussetzung, dass das Instrument zwischen der ersten und zweiten Beobachtung in seinen Lagern umgelegt wurde, die Polhöhe φ aus folgenden Formeln:

$$\frac{1}{15} t = \frac{1}{2} (T' - T + \Delta U)$$

$$\operatorname{tg} \varphi' = \operatorname{tg} \delta \sec,$$

$$\text{oder } \sin (\varphi' - \delta) = \sin \varphi' \cos \delta \cdot 2 \cdot \sin \frac{1}{2} t^2$$

$$\varphi = \varphi' + \frac{1}{2} (i' + i),$$

wo i und i' die beobachteten Neigungen der Achse zur Zeit der ersten und zweiten Beobachtung (bei nördlichen Polhöhen positiv genommen, wenn nördlich höher) bezeichnen.

Höhen-Instrumente.

Polhöhen-
bestimmung.

$$\operatorname{tg} N = \operatorname{tg} \delta \sec t$$

$$n = \frac{\sin \delta}{\sin N}$$

$$\cos (\varphi - N) = \frac{\cos z}{n}$$

Zeit-
bestimmung.

$$\operatorname{tg} \frac{1}{2} t^2 = \frac{\sin \frac{1}{2} (z - \varphi + \delta) \sin \frac{1}{2} (z + \varphi - \delta)}{\cos \frac{1}{2} (z + \varphi + \delta) \cos \frac{1}{2} (\varphi + \delta - z)}$$

$$\text{Sternzeit (resp. wahre Sonnenzeit)} = t + \alpha.$$

t ist positiv, wenn die Beobachtung im Westen,
negativ, wenn sie im Osten gemacht ist.

Einige andere Reductionsformeln.

Tägliche Aberration ausser dem Meridian.	Bedeutet α' die beobachtete AR, α die wahre AR, δ' die beobachtete Declination, δ die wahre Declination, τ den westlichen Stundenwinkel des Sterns, ψ die geocentrische Polhöhe, ϱ den Radius Vector, so ist $\alpha' - \alpha = 0''3110 \varrho \cos \psi \cos \tau \sec \delta$ $\delta' - \delta = 0''3110 \varrho \cos \psi \sin \tau \sin \delta.$
Verwandlung von Azimuth und Zenithdistanz in Stundenwinkel und Declination.	$A = \text{Azimuth.}$ $\sin \delta = \sin \varphi \cos z - \cos \varphi \sin z \cos A$ $\cos \delta \sin t = \sin z \sin A$ $\cos \delta \cos t = \cos z \cos \varphi + \sin z \sin \varphi \cos A.$
Verwandlung von Stundenwinkel und Declination in Azimuth und Zenithdistanz.	$\cos z = \sin \varphi \sin \delta + \cos \varphi \cos \delta \cos t$ $\sin z \sin A = \cos \delta \sin t$ $\sin z \cos A = -\cos \varphi \sin \delta + \sin \varphi \cos \delta \cos t.$
Verwandlung von Stundenwinkel und Declination in Zenithdistanz und parallactischen Winkel.	$\cos z = \sin \varphi \sin \delta + \cos \varphi \cos \delta \cos t$ $\sin z \sin p = \cos \varphi \sin t$ $\sin z \cos p = -\sin \varphi \cos \delta + \cos \varphi \sin \delta \cos t.$
Herstellung einer Tafel zur Lösung der drei letzten Aufgaben für eine bestimmte Polhöhe.	Man berechnet für die Stundenwinkel von 0^h bis 6^h die Grössen A , B , $\log C$, $\log D$, $\log E$ aus folgenden Formeln: $\sin \varphi \operatorname{tg} t = \operatorname{tg} A$ $\cotg \varphi \cos t = \operatorname{tg} B$ $\sin B \operatorname{tg} t = \cotg \varphi \sin A = E = \operatorname{tg} \Theta$ $C = \sin \Theta$ $D = \cos \Theta.$

Die Tafel wird in folgender Weise angewandt: Man rechnet Azimuth und Stundenwinkel vom Südpuncte aus nach der Seite hin, wo der Stern steht, so dass also beide nicht über 180° wachsen können. Alsdann wird, für die Verwandlung von Stundenwinkel und Declination in Höhe (h) und Azimuth (a):

$$C \operatorname{tg} (B + \delta) = \operatorname{tg} u,$$

$$D \sin (B + \delta) = \sin h, \text{ oder } \frac{\sin u}{E} = \operatorname{tg} h.$$

$$\text{Azimuth} = a = A + u:$$

Für die Verwandlung von Azimuth und Höhe in Stundenwinkel und Declination braucht man als Argument der Tafel, nicht wie vorher, den Stundenwinkel, sondern das in Zeit verwandelte Azimuth. Alsdann wird

$$C \operatorname{tg} (h - B) = \operatorname{tg} u,$$

$$D \sin (h - B) = \sin \delta \text{ oder } \frac{\sin u}{E} = \operatorname{tg} \delta,$$

$$t = A - u.$$

Zur Verwandlung von Stundenwinkel und Declination in Zenithdistanz und parallactischen Winkel dienen die Formeln:

$$\frac{E}{\cos (B + \delta)} = \operatorname{tg} p,$$

$$\cotg (B + \delta) \sec p = \operatorname{tg} z.$$





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